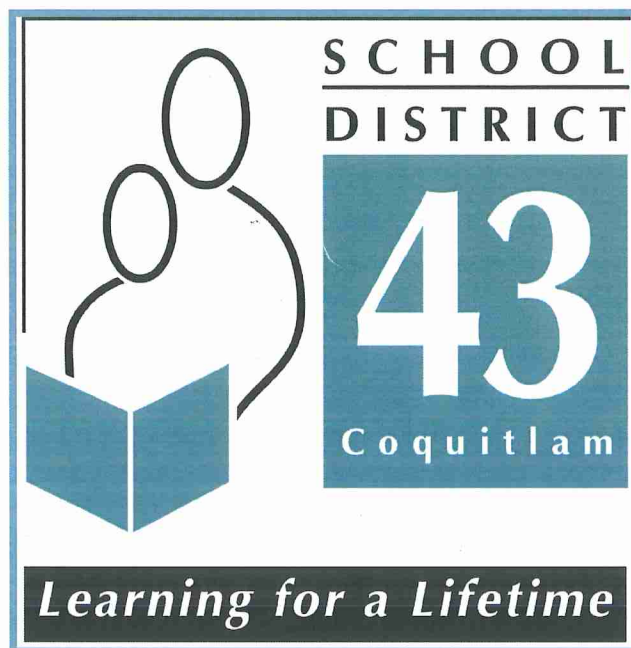


# **School District No. 43 (Coquitlam) 2014 Carbon Neutral Action Report**



## School District 43 (Coquitlam) 2014 Carbon Neutral Action Report

This Carbon Neutral Action Report for the period January 1<sup>st</sup> to December 31<sup>st</sup> 2014 summarizes our emissions profile and the amount of offsets purchased to reach net zero emissions, the actions we have taken in 2014 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2015 and beyond.

By June 30, 2014, School District 43's final Carbon Neutral Action Report will be posted to our website at [www.sd43.bc.ca](http://www.sd43.bc.ca).

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

### Emissions and Offsets Summary:

SD 43 (Coquitlam) GHG Emissions and Offsets for 2014 (TCO2E)	
GHG Emissions created in calendar year 2014 (from SMARTTool Homepage)	
Total Emissions	8,666 tCO <sup>2</sup>
Total Emissions for Offsets	8,623 tCO <sup>2</sup>
Adjustments to GHG Emissions Reported in Previous Years (from SMARTTool Homepage)	
Total Emissions	N/A
Total Emissions for Offsets	
Credit owing from PCT at end of 2014 reporting year (if applicable – from May 15 Invoice):	
Credit Owing	N/A
Total Emissions for Offsets for the 2014 Reporting Year (from Offset Invoice):	8,623 tCO <sup>2</sup>

<u>Mark Ferrari</u> Signature	<u>27/5/15</u> Date
<u>Mark Ferrari</u> Name (please print)	<u>Secretary - Treasurer</u> Title

## **Executive Summary**

Over the past 5 years the Coquitlam School Board of Education has considered climate change and sustainability District priorities. Educating staff, students, and parents on the impact of our behaviour around energy consumption and conservation has become integrated into our daily actions. The Coquitlam school district continues to be full supporters 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 utilities, waste management, fuel and paper supplies remain a concern for the management of the District and although some issues are addressed proactively, the biggest impact has been noted through sound daily operating practices. The energy conserving strategies implemented do not require employees to compromise indoor thermal comfort, lighting or air quality; it is in the management of these resources more responsibly that makes the difference. Establishing Carbon Neutrality every year since 2010, and again in 2014 has forced the Coquitlam School District to expand our environmentally sustainable practices and move forward with both technical and behavioural initiatives to ensure a commitment to sustainable change.

Five years ago the Coquitlam School District began taking comprehensive action against climate change by promoting environmentally sustainable designs for the future of all schools, students, staff and the community. In 2014 we have continued this mandate working hard to ensure understanding and involvement on the part of our staff and students around environmental initiatives leading to socially responsible behaviour change. Financially, the District continues to devote targeted funds to sustainability projects contributing to carbon neutrality. Coquitlam school district's larger energy management strategy includes reductions to energy consumption by the end of 2015 outlined in a district Strategic Energy Management Plan (SEMP). Our goal is to reduce our overall energy consumption by 30 % from 2007/08 totals. We are well on our way to achieving this target having reduced energy consumption by an average of 5% annually over the past five years. These reductions have been in all areas of energy consumption, providing significant cost savings to the district and financing further energy efficient retrofit projects.



Through the work of staff, students and our larger community, Coquitlam School District will continue to implement changes addressing climate change and pursue carbon neutrality through the mantra, *education, activation* and *innovation*, involving staff, students and parents in the process.

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, says Energy Manager Dave Sands and Energy Specialist Peroshat 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 Peroshat Assadian,  
School District 43 (Coquitlam)

#### ABOUT THE POWER SMART PARTNER PROGRAM

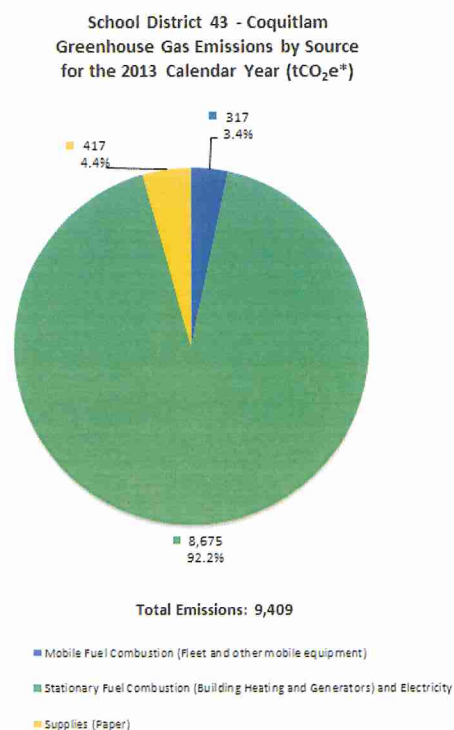
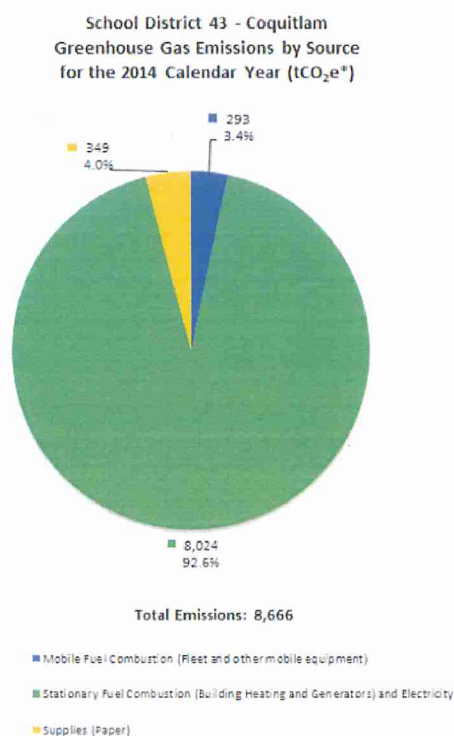
To find out how you can improve your business through the BC Hydro Power Smart Partner program, contact your BC Hydro Key Account Manager, call 604.522.4713 or visit [bchydro.com/partners](http://bchydro.com/partners)

bchydro  
powersmart

## Overview

### Greenhouse Gas Emissions:

School District 43's Total Greenhouse Gas Emissions in 2014 (left) and 2013 (right) are represented in the graphs below.



### Offsets applied to become Carbon Neutral in 2014:

The **8,623** tons of Carbon Emissions (tCO<sub>2</sub>e) noted above, require an offset investment of approximately **\$215,575.00** to be deemed Carbon Neutral.

### Changes to Greenhouse Gas Emissions and Offsets from 2013:

This compares to the investment of **\$235,225 in 2013** to offset **9,409** tCO<sub>2</sub>e. Generating a decrease of **\$19,650.00** or **8.4%** in emissions.

*Please refer to Appendix A for the 2014 GHG Emissions Source Detail Report and Appendix B for Total GHG Emissions by type*

## Past Emissions and Offset amounts:

Year	Carbon Emissions tCO <sub>2</sub> 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%

## Actions Taken to Reduce Greenhouse Gas Emissions in 2014:

Coquitlam School District has been a Power Smart Partner with BC Hydro for six years and has utilized Hydro's Energy Manager incentive to employ a "Principal of Energy and Sustainability." The District has also utilized the funding by Fortis BC to employ an Energy Specialist over the past 2 and a half years to add to the Energy Management Team. Our Executive level "Green Team" met regularly in 2014, 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, improvements in DDC attempt to increase cost. Three boiler plant through the Ministry's The District was awarded **\$186,000.00** to replace a elementary schools and HVAC upgrades, and (Direct Digital Controls) in an efficiency and reduce energy upgrades were applied for Carbon Neutral Capital Plan. a CNCP grant in the amount of heating plant in one of our are relying on the Annual Facility Grant (AFG) to fund to others. 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 **340,000 kWh's** in savings to the District.



Monitoring and measuring the efficiency of our centrally controlled heating and ventilation systems continued 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.

Design planning began for another replacement school also took place in 2014 while another began construction with all certified to achieve a LEED Gold or higher standard. All Capital planning projects continued to employ innovative approaches to sustainable design practices.

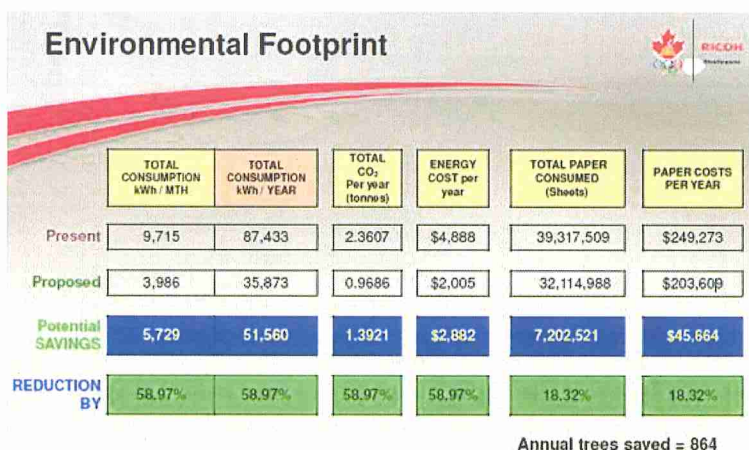
Education and behavioural change campaigns improved in 2014, Staff and students worked on independent projects around “Zero-waste” and Energy Conservation projects. Schools utilized grant funding from District “Green Grants” and other community sources to support this work.

Over a third of District schools expanded their recycling programs to include organic waste pick-ups to support “Zero-waste” campaigns in anticipation of the Metro Vancouver bylaw banning organic waste from landfills in January 2015. With the increase in organic waste recycling, the District is considering significant changes to its waste management practices.

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 Principal of Energy Sustainability 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



	TOTAL CONSUMPTION kWh / MTH	TOTAL CONSUMPTION kWh / YEAR	TOTAL CO <sub>2</sub> Per year (tonnes)	ENERGY COST per year	TOTAL PAPER CONSUMED (Sheets)	PAPER COSTS PER YEAR
Present	9,715	87,433	2,3607	\$4,888	39,317,509	\$249,273
Proposed	3,986	35,873	0.9686	\$2,005	32,114,988	\$203,609
Potential SAVINGS	5,729	51,560	1.3921	\$2,882	7,202,521	\$45,664
REDUCTION BY	58.97%	58.97%	58.97%	58.97%	18.32%	18.32%

Annual trees saved = 864

The amount of CO<sub>2</sub> saved is equivalent to driving 7 times from Vancouver to Kelowna and back.

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. 2014 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 record notes.

## Plans to Continue Reducing Greenhouse Gas Emissions in 2015:

School District 43 will continue to reduce Greenhouse Gas Emission by **educating** our students, staff and parents, facilitating **actions** and promoting **innovation** leading to sustainable behaviour 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 over the next 2 to 3 years a priority. With the continued support of the BC Hydro Management program, our goals to reduce our energy consumption will align with measures to be determined by end of April 2015.

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 process for our new schools progress, the District will continue to consult with energy modelers to ensure all of our new buildings perform at optimal levels of energy efficiency. Innovative design principles will continue to be considered throughout the design process as District Leadership, partner groups, and the community provide feedback as to the make-up of 21<sup>st</sup> Century Schools.

Sustainable behavior change will continue to be one of the District's key foci over the next three years as we continue to shift paradigms and reinforce a systematic approach to carbon neutrality and environmental

Education programs as teacher designed be key to the success based and personalized lining up with our will be promoted and personnel and our through district wide,



responsibility. BC Hydro well as Ministry and curriculum across K-12 will of our efforts. Project learning opportunities sustainability initiatives supported by district Energy Management Team school and classroom

presentations will continue to strengthen the nature of this mandate. Incentive programs for schools will continue through the support of 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 another 5% by the end of the 2015-2016 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 for this sustainable change.

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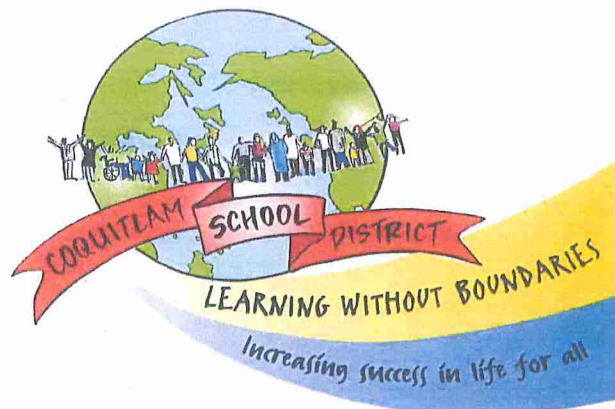
Patricia Gartland

Superintendent of Schools,  
School District 43 (Coquitlam)



Mark Ferrari

Secretary Treasurer  
School District 43 (Coquitlam)



## Appendix A:

### Total GHG Emissions source detail report 2014

School District 43 - Coquitlam							
Greenhouse Gas Emissions Source Detail Report for the 2014 Calendar Year							
Generated April 30, 2015							
Source			Quantity	Greenhouse Gases In Tonnes			
				CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	tCO <sub>2</sub> e *
Stationary Fuel Combustion (Building Heating and Generators) and Electricity							
Offset Required	Fuel Combustion **	156,721.59 GJ	7,751.12	0.16	0.14	7,797.08	
	Purchased Energy	80,985.35 GJ	226.76	0.00	0.00	226.76	
	Offset Required Sub Total		7,977.88	0.16	0.14	8,023.83	
	TOTAL STATIONARY EMISSIONS		7,977.88	0.16	0.14	8,024	
Supplies (Paper)							
Offset Required	Non-recycled Content Paper	7,675 Pkg	49.82	0.00	0.00	49.82	
	Recycled Content Copy Paper	51,454 Pkg	299.43	0.00	0.00	299.43	
	Offset Required Sub Total		349.25	0.00	0.00	349.25	
	TOTAL SUPPLIES EMISSIONS		349.25	0.00	0.00	349	
Mobile Fuel Combustion (Fleet and other mobile equipment)							
Offset Required	Fuel Combustion **	107,311.60 L	234.82	0.02	0.05	249.91	
	Offset Required Sub Total		234.82	0.02	0.05	249.91	
Offset Exempt	School Bus	14,079.20 L	30.62	0.00	0.01	32.68	
	CO <sub>2</sub> from Biogenic Fuel Combustion		10.04	N/A	N/A	10.04	
	Offset Exempt Sub Total		40.66	0.00	0.01	42.71	
	TOTAL MOBILE EMISSIONS		275.48	0.03	0.06	293	
	Total Offset Exempt		40.66	0.00	0.01	43	
	Total Offset Required		8,561.95	0.18	0.19	8,623	
	TOTAL EMISSIONS		8,602.61	0.18	0.20	8,666	

\* Each greenhouse gas has been converted to a standard measurement (tCO<sub>2</sub>e) by multiplying its emissions by its global warming potential (GWP).

The GWP of carbon dioxide (CO<sub>2</sub>) from both anthropogenic and biogenic sources is 1; methane (CH<sub>4</sub>) is 25, and nitrous oxide (N<sub>2</sub>O) is 298.

The Totals for tCO<sub>2</sub>e are shown here rounded to the nearest whole metric tonne as only whole tonnes of tCO<sub>2</sub>e can be purchased for offsets.

\*\* Includes Fossil Fuels and CH<sub>4</sub> and N<sub>2</sub>O from Biogenic Fuels



## Appendix B:

### Total GHG Emissions by type

April 29, 2015

Reporting Unit:

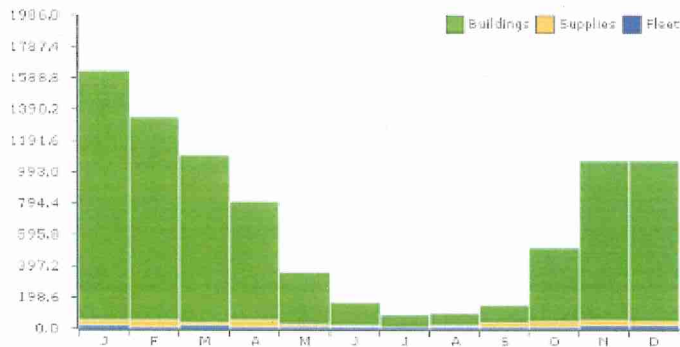
School District 43 - Coquitlam

Calendar Year 2014

Show Report

#### Total Emissions Calendar Year 2014 School District 43 - Coquitlam

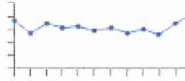
Metric tonnes  
CO<sub>2</sub> equivalent (tCO<sub>2</sub>e)



Click on the bars to view data for each month

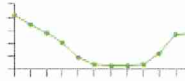
#### Fleet

GHG Emissions  
(Metric Tonnes CO<sub>2</sub>e)



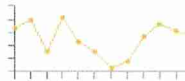
#### Buildings

GHG Emissions  
(Metric Tonnes CO<sub>2</sub>e)



#### Supplies

GHG Emissions  
(Metric Tonnes CO<sub>2</sub>e)



#### Totals Calendar Year 2014, School District 43 - Coquitlam

	Measure	Quantity	Greenhouse Gases in Tonnes				
			CO <sub>2</sub>	BioCO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	tCO <sub>2</sub> e <sup>1</sup>
Scope 1 (Direct) Emissions							
Mobile Combustion (Fleet)	Litres	121,390.80	265.44	10.04	0.03	0.06	292.63
Stationary Combustion, Reported <sup>2</sup>	GigaJoules	156,721.59	7,751.12	0.00	0.16	0.14	7,797.08
Scope 2 (Indirect) Emissions							
Purchased Energy, Reported <sup>2</sup>	GigaJoules	80,985.35	226.76	0.00	0.00	0.00	226.76
Scope 3 (Business Travel and Office Paper) Emissions							
Office Paper	Packages	59,129.00	349.25	0.00	0.00	0.00	349.25
Total Emissions, Calendar Year 2014			8,592.57	10.04	0.18	0.20	8,666
Carbon Neutral or Offset Exempt			30.62	10.04	0.00	0.01	43
Total for Offsets <sup>4</sup>			8,561.95	0.00	0.18	0.19	8,623

# 2014 Carbon Neutral Action Report (CNAR)

## - Part 2 ACTIONS

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### Organization Name

School District 43 (Coquitlam)

### Actions Taken to Reduce Emissions

#### 1) Stationary Fuel Combustion, Electricity (Buildings): Indicate which actions were taken in 2014:

Performed energy retrofits on existing buildings

Yes

Built or are building new LEED Gold or other "Green" buildings.

Yes

Undertook an evaluation of overall building energy use.

Yes

Please list any other actions taken to reduce emissions from Buildings:

Continued BC Hydro Continuous Optimization Re-commissioning of 6 buildings

#### 2) Mobile Fleet Combustion (Fleet and other vehicles): Indicate which actions were taken in 2014:

Do you have a fleet?

Yes

Replaced existing vehicles with more fuel efficient vehicles (gas/diesel)

Yes

Replaced existing vehicles with hybrid or electric vehicles

No

Reduced the overall number of fleet vehicles

No

Took steps to drive less than last year

Yes

Please list any other actions taken to reduce emission from fleet:

Reduction of off-site meetings

Greater use of conference calling, online meetings and webinars

### **3) Supplies (Paper):Indicate which actions were taken in 2014:**

Used less paper than previous year

Yes

Used only 100% recycled paper

No

Used some recycled paper

Yes



Used alternate source paper (Bamboo, hemp, etc.)

No

Please list any other actions taken to reduce emissions from paper use:

Continued implementation of a District wide "Print Wise" Print Strategy - reducing printers and copiers in all buildings and monitoring building and individual copying habits including the implementation of an eFax technology and the collection and analysis of copying and printing metrics

### Page 3

## Actions Taken to Reduce Emissions - continued

Explain how you plan to continue minimizing emissions in 2015 and future years:

School District 43 (Coquitlam) is committed to:

- maintaining a strong energy management team (Energy Manager/Energy Specialist) to monitor energy consumption and advocate for energy efficiency in all District buildings
- retrofitting inefficient heating plants through CNCP grants and other financial sources
- improving DDC (Direct Digital Controls) for better management of building heating plants and lighting
- retrofitting exterior lighting with longer lasting LED alternatives
- investing in a more comprehensive energy management software to better monitor and address building energy use
- utilizing more technology to reduce paper use and make use of virtual meetings and seminars to share knowledge.
- renew fleet vehicles with both fuel efficient and hybrid vehicles.
- addressing plug load energy by limiting appliances in various areas of buildings

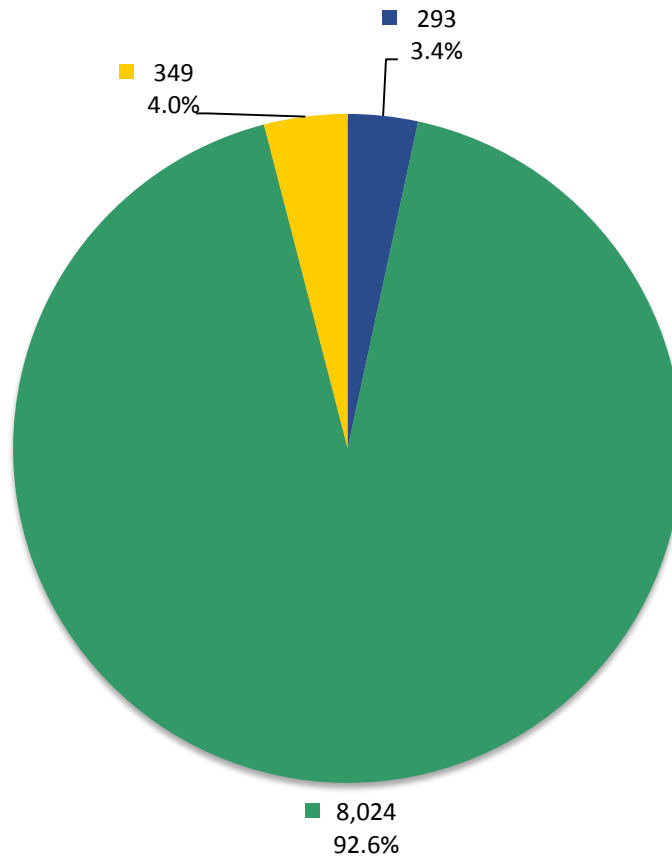
If you wish to list any other "sustainability actions" outside of buildings, fleet, paper and travel check "yes". This reporting is optional.

No

# School District 43 - Coquitlam

## Greenhouse Gas Emissions by Source

### for the 2014 Calendar Year (tCO<sub>2</sub>e\*)



**Total Emissions: 8,666**

- 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 2014 (Generated June 23, 2015 2:27 PM)

Total offsets required: **8,623**. Total offset investment: **\$215,575**. Emissions which do not require offsets: **43** \*\*

\*Tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) 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.