

Carbon Neutral Action Report 2016

DELTA SCHOOL DISTRICT 37



Delta School District
Inspired Learning

EXECUTIVE SUMMARY

Executive Summary

The Delta School District is committed to fostering policies, practices and educational programs which will protect and preserve the environment. In addition to hardware projects, where inefficient equipment was replaced with more efficient equipment, the District had launched several conservation behavioural programs and plan to continue these in the future.

In 2016, Delta School District:

Replaced lighting fixtures with LED fixtures /LED Bulbs that have lower power density but more lumen output in 17 lighting projects which resulted in 363,432kWh savings for Delta School District

Replaced a rooftop unit with a high efficiency air source heat pump with auxiliary gas

Installed occupancy sensors for various lighting projects

Launched behavioural programs that involved students and staff

Bridging the conversation between students and Delta Green Committee members by inviting them to our monthly meetings and students presented on their Green Initiatives

Launched the Energy Conservation Grant Program

Continued with the BC Hydro Energy Manager program

Involvement in the Be the Change program, attending and participating in the meetings

For the year of 2016, Delta School District's carbon footprint was 2,596 tCO₂e . The Delta School District's Carbon Footprint remains on a steady decline and in the 6 years the District has been able to reduce carbon offsets by over 38% despite the variances in Heating Degree Days.

We are pleased to present the following report on our pursuit of becoming carbon neutral.

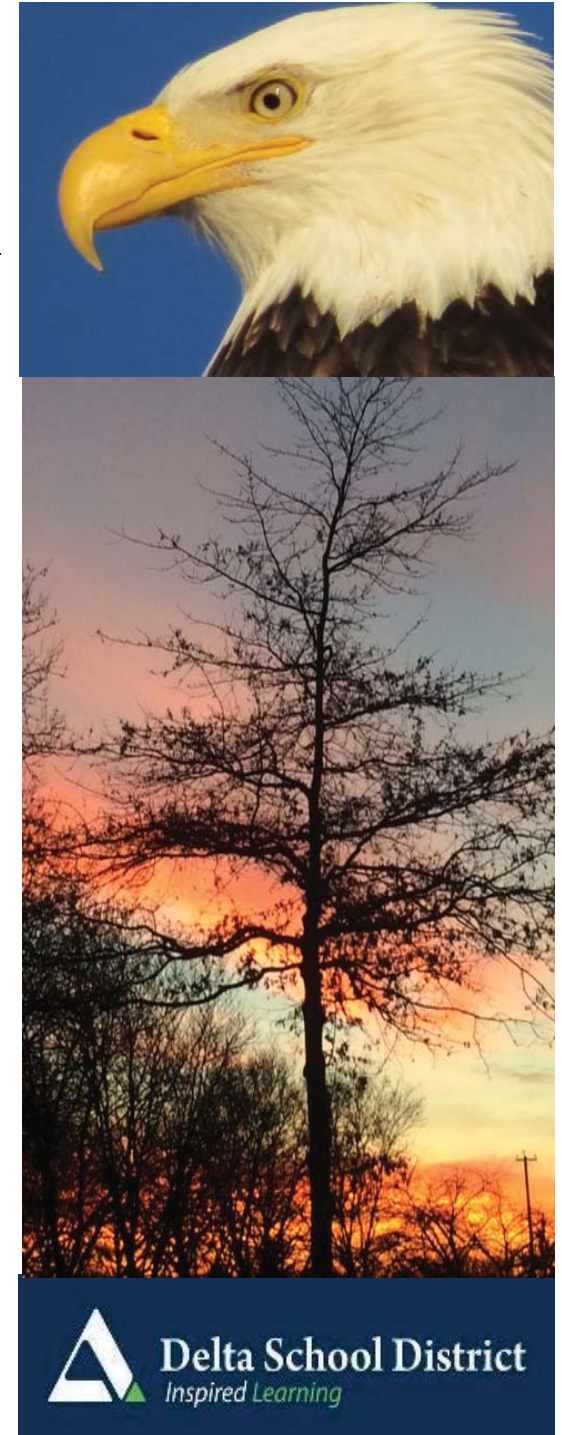
Doug Sheppard
Superintendent of Schools



Frank Geyer, P.Eng, FMA
Director of Facilities & Planning



Marilyn Christensen
Energy Manager



Carbon Neutral Action Report 2016

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GREENHOUSE GAS EMISSIONS 2016

**Table 1 Greenhouse Gas Emissions
Breakdown from Smart Tool**

Emission Source	2016 (tCO2e)	2015 (tCO2e)	2014 (tCO2e)	2013 (tCO2e)	2012 (tCO2e)	2011 (tCO2e)	2010 (tCO2e)
Buildings							
Electricity	90.79	87.54	91.95	141.78	233.41	243.44	247.86
Natural Gas & Propane	2076.16	1748.00	2022.56	2519.75	2868.66	3268.91	3048.99
Fleet							
Gasoline, Propane & Diesel	239.58	215.17	360.60	465.05	408.44	402.79	392.20
Office Paper							
Exempt	189.87	202.05	196.55	216.38	219.30	167.20	437.23
	-96	-73	-51	-55	-54	-51	-51
Total Emissions	2500.40	2179.76	2620.66	3287.96	3675.81	4031.34	4075.28

GREENHOUSE GAS EMISSIONS

OFFSETS APPLIED TO BECOME CARBON NEUTRAL 2016

In 2016, the Delta School District produced a total of 2,596 tonnes of CO₂e from all sources covered as reported in SmartTool. Based on the summary report provided by SmartTool, 963 tonnes of CO₂e are “Offset Exempt” where the total offset amount is 2,500 tonnes of CO₂e. Out of Scope Emissions include, refrigerants estimated to be less than 1 percent of the District’s emissions. The value was estimated from the refrigerant recharge amounts of R134a and R404a (HFC’s) in the year 2016. The emissions from refrigerants are deemed to be out of scope and have not been included in the total District Greenhouse Gas Emissions profile.

Table 2

Greenhouse Gas Emissions Comparison to Baseline

Emissions to Offset	2016 (tCO ₂ e)	2015 (tCO ₂ e)	2014 (tCO ₂ e)	2013 (tCO ₂ e)	2012 (tCO ₂ e)	2011 (tCO ₂ e)	2010 (tCO ₂ e)
Total Emissions	2500	2180	2621	3288	3676	4031	4075
Compare Offsets to 2010 Baseline	-38.6%	-46.5%	-35.7%	-19.3%	-9.8%	-1.1%	0.0%
Heating Degree Days HDD	2543	2497	2634	2831	2859	2976	2627
						+13.3	
Compare HDD to 2010	-3.2%	-4.9%	+0.3%	+7.8%	+8.8%	%	0.0%

GREENHOUSE GAS EMISSIONS

CHANGES TO GREENHOUSE GAS EMISSIONS & OFFSETS REPORT FROM PREVIOUS YEARS

In Delta, a sharp increase in HDD, (Heating Degree Days) in 2011, eventually returning to 2010 levels in 2014 had little impact on the Greenhouse Gas Emissions, which steadily declined. A major drop in HDD in 2015 resulted in a corresponding decline in Greenhouse Gas Emissions, however as the 2016 HDD increased, so did the emissions. Taking away the 2015 significant drop in emissions, the District's carbon footprint remains on a steady decline. In 6 years, the District has been able to reduce

EMISSION REDUCTION

Emission Source	2016 (tCO2e)	2010 (tCO2e)	2010 vs 2016
Buildings			
Electricity	90.79	247.86	-63.4%
Natural Gas	2076.16	3048.99	-31.9%
Fleet			
Gasoline, Propane & Diesel	214.70	359.69	-40.3%
Biodiesel	24.88	32.51	-23.5%
Office Paper	189.87	437.23	-56.6%
Total Emissions	2596.40	4126.28	-37.1%



HARDWARE LIGHTING PROJECTS

17 LIGHTING UPGRADE PROJECTS THAT SAVED 363,432 KWH

Replace Lighting & Occupancy Sensors Tilbury Maintenance	A lighting project at Tilbury Maintenance buildings was completed. There were various lamp sizes of T-8 -28 watt lamps that were replaced with 17watt LED tubes and Occupancy sensors installed for a total of 6817kWh savings. A total of 5367 tubes were replaced and 31 occupancy sensors.
Replace Lighting in 8 Elementary School Gyms	There were 8 Elementary School Gyms that had the existing lighting T-8 -28 watt 4 Lamp fixtures replaced with LED 104Watt 2 Lamp fixtures. A total of 33,120kWh savings. Gibson, Hellings, Brooke, Gray, McCloskey, Jarvis, Hawthorne, and Holly
Replace Lighting in South Delta	A lighting project at South Delta School was completed which consisted of replacing T8 28W lamps of various sizes to LED tubes 17watts. A total of 1800 Bulbs were replaced in various rooms which saved 43,200 kWh.
Replace Lighting in Seaquam Secondary	A lighting project at Seaquam School was completed which consisted of replacing T8 28W lamps of various sizes to LED tubes 17watts. A total of 3826 Bulbs were replaced in various rooms which saved 122,432 kWh.
Replace Lighting in Delta Secondary	A lighting project at Delta Secondary School was completed which consisted of replacing T8 28W lamps of various sizes to LED tubes 17watts. A total of 362 Bulbs were replaced in various rooms which saved 98,330 kWh.
Replace Lighting in South Delta	A lighting project at South Delta School was completed which consisted of replacing T8 28W lamps of various sizes to LED tubes 17watts. A total of 1800 Bulbs were replaced in various rooms which saved 8912 kWh.
Replace Lighting in Delview	A lighting project at Delview School was completed which consisted of replacing T8 28W lamps of various sizes to LED tubes 17watts. A total of 558 Bulbs were replaced in various rooms which saved 11,804kWh.
Replace Lighting in Sands, North Delta & Burnsvew	A lighting project at Sands, North Delta and Burnsvew Schools was completed which consisted of replacing T8 28W lamps of various sizes to LED fixtures. The project resulted in saving 38,817 kWh.

DELTA SCHOOL DISTRICT 37

BEHAVIORAL CAMPAIGNS

Behavioral Programs that involve students and staff

The Delta School District has a very strong group of sustainability leaders ranging from students to the Superintendent of Schools and Board Chair. The Delta Green Committee was reinstated in 2014. The committee consists of representatives of each stakeholder group: students, teachers, principals, vice-principals, executives and facilities management. The committee has revitalized the Sustainability Policy/Procedure with input from all members and with consideration from all perspectives and interpretation. The committee brings forward sustainability projects and issues where input from the group is vital to speedy completion and resolution



In participation with a BC Hydro Workplace Conservation Program, the District has been using newsletters, blogs, Facebook and Twitter in collaboration with the District's communication manager to share information on upcoming sustainability activities and reporting of the success of the activities. The performance of the social media posts is tracked by visits, likes and re-posts.

DELTA SCHOOL DISTRICT 37

BEHAVIORAL CAMPAIGNS

Energy Wise Network Campaigns	In conjunction with BC Hydro, Delta School District launched three Behavioral Campaigns in the school District under the Energy Wise Network Program. The following three campaigns were implemented, a) Winter Shut Down b) Unplug Appliances c) Green Awareness.
Winter Shut Down Campaign Results	<p>The students, schools and employees contributed to the success of the campaign in these ways:</p> <p>16 Schools participated and 9 Custodians participated. Upon completion of the campaign, the winners were announced at the Delta Green Committee Meeting. The winner for the School Campaign was Seaquam Secondary Green Team and presented at the Delta Green Committee meeting in January 2017. The winners of the Custodial Campaign were 9 schools, Richardson, North Delta, Cougar Canyon, South Park, Jarvis, Delta Secondary, Ladner, Port Guichon, Anniesville who were presented with Tim Horton Gift Cards.</p>

DELTA SCHOOL DISTRICT 37 BEHAVIORAL CAMPAIGNS WINNERS



Seaquam Green Team Winners of the Winter Shut Down Campaign 2016

DELTA SCHOOL DISTRICT 37

BEHAVIORAL CAMPAIGNS

Green Awareness Campaign

Our campaign was planned in conjunction with Seaquam Secondary School Green Team. Participants in the campaign had the opportunity to contribute to the school districts' environmental and sustainability goals by encouraging other students to commit acts of "Green". The Seaquam Green Team designed a school scarf with the logo "Operation Green Scarf". The mock up was sent to the company and they sent back a design and the students choose the design. 100 Scarves were ordered by Energy Manager Marilyn Christensen. At the Delta Green Committee meeting in February 2017, the Seaquam Secondary Green Team gave 5 Operation Green Scarves to the Chalmers Elementary students who gave a Green presentation to the Delta Green Committee. It was a great start to Operation Green. The Seaquam Secondary Green Team created and developed a DSYN Facebook page to raise awareness of Green Campaign actions. Social media campaign to catch people doing things "Green". Photos will be taken of green actions and posted.

Results

The students, schools and employees contributed to the success of the campaign in these ways.

Seaquam Secondary Green Team designed the scarf for Operation Green Scarf

Seaquam Green Team developed and designed a Facebook page that raises awareness of Green campaigns and activities for students

Seaquam Secondary Green Team presented Chalmers Elementary Green Team with the Operation Green Scarves for doing a Green Presentation to the Delta Green Committee I February 2017

Operation Green will continue throughout the year 2017-2018



DELTA SCHOOL DISTRICT 37

BEHAVIORAL CAMPAIGNS UNPLUG APPLIANCES

Energy Wise Network Campaign Unplug Appliances Results

UNPLUG SMALL APPLIANCES

Our campaign was planned with the **Chalmers Elementary Green Team**. The students created a check sheet to shut down small appliances for 6 Fridays for Feb 3 to March 10, 2017. For the following appliances were included on the checklist: cd player/stereo, pencil sharpener, desktop computers, ipad, projector cart/speakers, overhead projector, microwave, hallway printer.

The students would attend each room and check off the appliances that were unplugged for the weekend. It proved to be a valuable experience as it served as a constant reminder that the students would be attending your room to check and see if the appliances had been shut off.

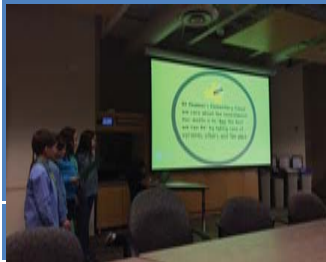
Results

The students of the Chalmers Green Team and the teacher Barbara Grainger contributed to the success of the campaign in these ways.

1 School participated in this campaign – One school at a time for success

Upon completion of the campaign, the winners were announced and given free time. http://prezi.com/znldk10nwqm/?utm_campaign=share&utm_medium=copy

In the Prezi presentation there are photos of the campaign and posters in the school



DELTA SCHOOL DISTRICT 37

WORKPLACE CONSERVATION GRANT 2016-2017

The Workplace Conservation Grants were available to all schools in the District. All schools had the opportunity to apply for the Grants and 19 schools applied. Some of the projects were, Pledge Posters, Green Teams, Energy Outreach Programs, Power Down Fridays, Innovation Projects, Lights Out Lunches and Presentations to Staff and Students.



DELTA SCHOOL DISTRICT 37

PAPER CONSUMPTION 2016 STATISTICS

Indicator	Total
Managed Ricoh @Remote Devices	153
% of Total Population	43%
% of Ricoh Population	94%
Total Pages	20,356,592
Duplex Pages	13,195,720
Duplex %	64.3%
Combine Pages	124,910
Combine %	1%
Sheets of Paper Saved	6,722,770
Paper Savings (\$ 0.007/Sheet)	\$ 47,059.39
Trees Saved	806.8
CO2 Sequestered by Trees (KgCO)	427
Manufacturing CO2 Avoidance (KgCO)	73,950.60

2016		
	School	Duplexing
High	South Delta Secondary	83%
High	Seaquam Secondary	81%
High	Burnsview Secondary	78%
High	Delta Secondary	78%
High	North Delta Secondary	76%
Low	Gray Elementary	45%
Low	McCloskey Elementary	43%
Low	Hellings Elementary	43%
Low	Annieville Elementary	37%

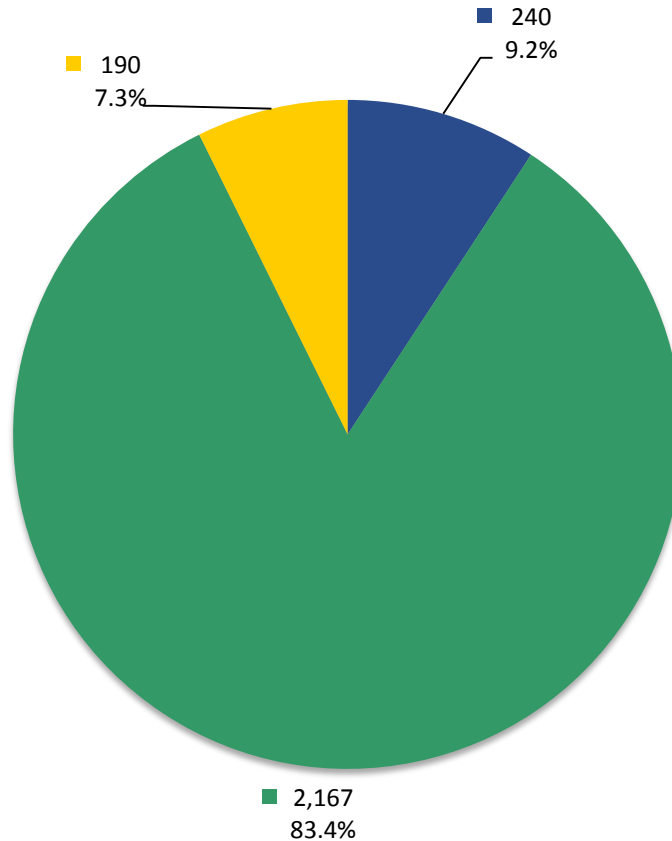
Delta School District 37
Duplex Statistics:
Jan 1, 2016—December 31, 2016

Delta = 64.3%
Down Slightly from 64.5 % last review
Note: Leading School Districts 65-70%



Delta School District
Inspired Learning

**School District 37 - Delta
Greenhouse Gas Emissions by Source
for the 2016 Calendar Year (tCO₂e*)**



Total Emissions: 2,596

- 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 4:10 PM)

Total offsets required: **2,500**. Total offset investment: **\$62,500**. Emissions which do not require offsets: **96** **

*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

Page 2

Part One (external)

Contact Name(s):

Frank Geyer, PEng, FMA

Organization Name:

Board of Education of School District No. 37 (Delta)

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.: We performed 17 retrofit lighting projects in the past year that resulted in 363,432kWh savings. We replaced T-8 bulbs with LED bulbs and some T-8 fixtures were replaced with LED fixtures. This included school gyms, classrooms, shops and school hallways.

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

At Delta School District we will continue to reduce emissions wherever we can as per our Sustainability Administrative Procedure (policy). We are committed to instilling in our students, staff, parents and community an awareness of and commitment to sustainability by leading environmental stewardship and fostering a holistic approach towards climate change, energy optimization, waste reduction and water conservation.

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

Yes

If yes, please describe briefly:

The Delta School District, in conjunction with BC Hydro, sponsored an Energy Manager position. The position oversees the energy reduction electrical projects and the school district-wide behavioural campaign programs.

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).: Right sizing of fleet with flex fuel vehicles
-

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

At Delta School District we will continue to optimize our fleet vehicle plans in future years by entertaining new options that become available with our ever changing technology.

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

-
- Other actions? Please describe briefly.: We work closely with Ricoh to monitor our paper consumption and we meet at least twice a year to discuss options that we could do to further reduce our paper consumption.
-

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

Our plan is to continue to work with Ricoh in monitoring our paper consumption and work towards further reductions in paper usage.

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

-
- Encouraged alternative travel for business (e.g. bicycles, public transit, walking)
-

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)
-
- Other, please describe briefly: 1. Energy Conservation Grant – An educational behavioural program that is available for the all schools which focuses on energy reduction and awareness initiatives. Some of the initiatives are, Green Teams, Poster Campaigns, Power Down Days, Energy Outreach Programs, Innovation Projects, and Lights Out Lunches. 2. BC Hydro Energy Wise Network – We focused on three campaigns: Winter Shut Down Campaign, Unplug Small Appliances, and Green Awareness Campaign. 3. Delta School District Delta Green Committee – Delta School District has a team of dedicated individuals who are committed to supporting our Sustainability Administrative Procedure and who support all educational sustainability programs. We also have students from various schools attend the monthly meetings to present their “Green actions and projects”. Bridging the conversations between students and administrative personnel is proving to be successful.

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
-
- Other, please describe briefly: Other Sustainability Actions would be our BC Hydro Energy Manager program, which is responsible for reducing 300,000 kWh of energy for the year 2016 and it has been accomplished. We were able to reduce the energy consumption of the school district through various upgrades for lighting projects by replacing old lighting technology with LED technology.