

An aerial photograph of a river delta, likely the Sacramento-San Joaquin River Delta. The image shows a complex network of waterways and a dense grid of agricultural fields in various shades of green and brown. A large, prominent building complex, possibly a school or government facility, is visible in the center-right. The overall scene is a mix of natural water features and human-made agricultural and urban structures.

Carbon Neutral Action Plan 2012

Executive Summary

Climate change, what are we going to do about it? The Delta School District has committed to reducing its carbon footprint from any corner possible. We understand that this is not a fight that can be won overnight. Our plan to be sustainable needs to be sustainable itself. With support from the Board of Education, the Executive Committee, the Energy Manager and Energy Specialist, the students and the teachers, the Delta School District will build a strong, healthy and sustainable future for the community. With the leadership of the DeltaGreen Committee, consisting of various stakeholders and partner groups, carbon neutrality can be viewed from the perspective of everyone in the school district to ensure all ideas, comments and concerns are heard.

As energy costs are increasing, energy retrofits become more financially feasible. In the year of 2012, the Delta School District:

- Completed a district-wide upgrade of all building automation systems
- Replaced domestic hot water boilers with higher efficiency units
- Upgraded space heating plants with condensing boilers and geo-exchange systems
- Upgraded exterior lighting with LED and induction fixtures
- Upgraded the control of lights and heating units by adding occupancy sensors
- Replaced classroom light fixtures that use half the power of the original and outputs the same amount of light
- Purchased an infrared camera to evaluate the performance of building envelopes
- Supported schools in their own sustainability projects through funding and other resources with the maintenance team

For the year of 2012, the school district's carbon footprint was 3,732.54 tCO₂e. With the help of all stakeholders including, students, teachers, administration and facilities maintenance, we were able to reduce our carbon footprint by 8.6% overall while the heating degree days decreased by only 4% from the previous year. The use of office paper increased by 31.2% compared to 2011, which can be attributed to teacher job action in 2011 and timing of bulk purchases. The office paper consumption is still significantly lower than the value reported for 2010.

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



F.J. (Frank) Geyer, PEng, FMA
Director of Facilities & Planning



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Deputy Superintendent of Schools



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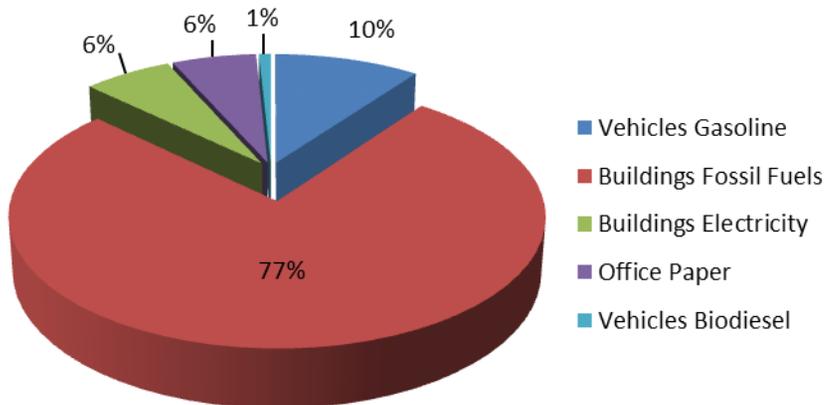
2012 Greenhouse Gas Emissions

For the 2012 calendar year, the Delta School District's greenhouse gas emissions were 3,732.55 tonnes of CO₂e. The emissions decreased by approximately 8% from the previous calendar year.

The majority of the sites use fossil fuels for space heating while the remainder use electricity for air source heat pump (with auxiliary natural gas during extreme temperatures) space heating. The electricity consumption compared to the previous year decreased by just over 4%, while fossil fuel emissions decreased by approximately 12%. These are impressive figures given that the heating degree days only decreased by approximately 4%. Office paper consumption increased by 31.2% over 2011 figures, which can be attributed to teacher job action in 2011 and timing of bulk purchases. The office paper consumption is still significantly lower than the value reported for 2010.

The following chart summarizes the greenhouse gas emission by source.

Delta School District Greenhouse Gas Emissions for 2012



Emission Source	2012 (tCO ₂ e)	2011 (tCO ₂ e)	2010 (tCO ₂ e)	2012 vs. 2011
Buildings				
Electricity	233.25	243.44	247.86	-4.2%
Natural Gas & Propane	2871.10	3269.38	3049.42	-12.2%
Fleet				
Gasoline, Propane & Diesel	378.25	367.10	359.69	+3.0%
Biodiesel	30.64	35.96	32.51	-14.8%
Office Paper	219.30	167.20	437.23	+31.2%
Total Emissions	3732.54	4083.07	4126.71	-8.6%

Out-of-Scope Emissions include refrigerants: R-22 (HCFC), R-401a (HCFC), MP-39 (HCFC). Fugitive emissions were estimated to be 20.64 tCO₂e which is less than 1 percent of the school district’s emissions. The value was estimated from the refrigerant recharge amounts of R-134a and R-404a (HFCs) in the year of 2012. The emissions from refrigerants are deemed to be out of scope and have not been included in the total school district greenhouse gas emissions profile.

Offsets Applied to Become Carbon Neutral in 2012

The total emissions offset applied to become carbon neutral in 2012 as reported in the “Total for Offsets” line in SMARTTool is 3,677 tCO₂e. Total offsets to be purchased amount to \$91,925 plus GST.

As required by Section 5 of the Carbon Neutral Government Regulation, 55 tCO₂e of emissions resulting from the operation of school buses were reported as part of our greenhouse gas emissions profile in 2012. However, they were not offset as they are out- of-scope under Section 4(2)(c) of the Carbon Neutral Government Regulation.

Changes to Greenhouse Gas Emissions and Offsets Reporting from 2011

Following the public release of Delta School District’s 2011 Carbon Neutral Action Report, it was determined that the total emissions and offsets required to become carbon neutral for the 2011 calendar year were under-reported by 6 tCO₂e. The difference in offsets required have been purchased and applied against our 2011 emissions.





Emissions Reduction Activities

The following is a high-level summary of the activities the Delta School District continued with from previous years as well as new projects initiated in 2012.

Hardwire Projects

Building Automation System Upgrade

The Direct Digital Control (DDC) System was upgraded to a newer version that expands the capabilities of the controllers. With these new controllers, we are able to tune the HVAC equipment to minimize “hunting” and reach set points faster thereby minimizing wasted energy.

Domestic Hot Water Boiler Heating Plant

The domestic hot water boiler plant was replaced in one of the larger high schools in the district. Two high efficiency condensing boilers and two insulated storage tanks were installed to replace the old mid-efficiency boilers and extremely large storage tank. The large storage tank was removed to eliminate heat loss into the mechanical room through the large surface area of the tank. The replacement of other domestic hot water heating systems has been explored and may be completed in future years depending on available funding.

Condensing Boiler Heating Plants

At eight elementary school sites, replaced antiquated, mid-efficiency conventional boilers with high efficiency condensing boilers. These were installed as part of the partnership with Fortis BC. This group of sites is expected to see a savings of approximately 5938 GJs per year with expected lives of 25 years.

Geo-Exchange Heating Plants

Geo-Exchange systems are being installed at 11 school district sites to provide hydronic heating throughout the buildings. The construction commenced in 2012 and is expected to be completed by late 2013. Sites include elementary schools, secondary schools and administrative buildings that have the highest savings opportunity. These 11 sites are expected to see a total savings of 34,986 GJ per year. Both the sites with new condensing boilers and new geo-exchange sites were installed as part of the partnership with Fortis BC.

***Outdoor Parking
Lot and Building
Exterior Lights***

The school district is continually replacing HID (high intensity discharge) HPS (high pressure sodium) area lighting with lower power input induction and LED (light emitting diode) lighting units. The lighting output from the new units is higher than or equal to the original units that had higher power inputs.

***Upgraded Lighting
Control***

Occupancy sensors have been installed in all classrooms, libraries, offices, hallways, storage rooms and washrooms. The lights were only on when the space is occupied during school operating hours. The installation for all the sites started years ago but was only completed in 2012. Approximately 50% less power is used compared to the original lighting fixtures.

***Upgraded Heating
Control***

At certain sites, classrooms each have one designated unit ventilator that provides heating and ventilation. Majority of the heat used is for heating outside air for ventilation. The occupancy sensors are used for closing the outside air damper when the room is not occupied in order to minimize the amount of outside air that needs to be heated. Installation of occupancy sensors in classrooms with terminal units started in 2011 and is continuing into 2013-2015. The sensors were installed in 3 sites in 2011, 3 more in 2012 and more are planned for following years. Five of the six sites with occupancy installed still need to be incorporated into the HVAC programming, which will be completed in 2013.



Upgraded to More Efficient Interior Lighting Fixtures

Existing 2-lamp T8 fixtures were replaced with 1-lamp T8 fixtures that produce equivalent lighting output than the previous. Lamps are the same therefore energy usage is reduced by 50%. Two schools were upgraded in 2011, five in 2012, with more planned in 2013.

Infrared Camera

An infrared camera was purchased to investigate the performance of the building envelope including:

- missing insulation – leads to heat loss through walls
- poor weather stripping around doors/windows – heated (conditioned) air is leaked around the doors/windows and/or outdoor air leaks into the building
- finding leaks in ductwork – improper distribution of heated (conditioned) air to occupied space leading to an increase in demand and inefficient heating system

The camera also has many maintenance purposes that would benefit other departments. Six maintenance personnel from various departments were trained at a Level 1 Building Investigations course to ensure proper use of the camera and proper interpretation of the images produced. The camera is expected to be used throughout 2013 focusing on weather stripping and will be shared among the departments in response to issues when they arise; it will be used for building envelope investigations in the following years.





Behavioural Projects

Water Bottle Filling Stations

In our quest to remove all beverage vending machines from all the schools, water bottle filling stations have been installed at all secondary schools. The students have reduced their beverage vending machine purchases and are filling their personal re-useable water bottles. Thousands of plastic bottles have been diverted from the production and recycling/waste/litter stream thereby reducing the cradle-to-grave energy consumption.

Sustainability Grant

Student education is the main responsibility of the Delta School District. Students are encouraged to participate in any sustainable activities at their schools and be innovative in coming up with ways to be green. Many schools have started a “green team” or sustainability club where students work together on projects such as:

- energy audits
- lights out days
- walk to school
- reduce/reuse/recycle
- “litterless” lunches
- composting
- rain gardens
- other sustainable initiatives

Schools can apply for a school district-funded sustainability grant to fund some of their green projects and as part of the requirements for funding, 25% of their activities have to be geared towards energy conservation. The latest round of applications started in September 2012, with eight schools participating and the results of their projects to be presented to the Board of Education in May 2013.





BC Hydro Energy Ambassador Program

For the school year beginning September 2012, three secondary schools with a total of 18 students are participating in the BC Hydro Energy Ambassador program where students take part in an energy workshop that discuss the purpose of energy conservation and share ideas on how to spread the information. The students then compose their own active presentations with games to present to elementary school students to spark an interest to be more energy aware. The energy ambassadors exercise their leadership skills and inspire the elementary school students to share their own ideas on how to reduce energy consumption.

In the previous school year, 4 secondary schools applied for the energy ambassador grant from BC Hydro and two of the schools were awarded the grant including Seaquam Secondary and North Delta Secondary.



BC Hydro Workplace Conservation Awareness Program

For the school years 2012/2013, the Delta School District participated in a BC Hydro pilot program called the Workplace Conservation Awareness Program (WCA). Nine schools participated in the program. There were 3 main objectives:

- Create a strong sustainability community within each school
 - Support leadership of energy champions
 - Use existing district intranet as a tool for online collaboration
 - Recognize strategies for sites participating
- Incorporate Plug Load into Sustainability Consciousness
 - Marketing campaigns
 - Promote energy conservation practices to groups that rent district space
 - Integrate new energy dashboard technology to monitor energy use at each site

The BC Hydro program administrative requirements were completed for the 9 sites but the same conservation measures were applied to schools other than the original 9. As mentioned in the previous greenhouse gas emissions summary, the results are positive.

BC Hydro Outreach Team Presentations

As facilities operations staff are the stewards of our sites, they participated in a BC Hydro PowerSmart BBQ lunch presentation that involved a presentation and a game of “Jeopardy” with energy related questions. The event provided the staff with energy saving tips for not only the school sites but also for home such as using daylight, unplugging equipment to avoid phantom power and many other tips. The staff gained an understanding as to the purpose of being more energy conscious and has incorporated what they learned into their daily routines.

Achievements of 2012

Energy Manager of the Year

At the 2012 Educational Facility Managers Association of British Columbia Conference, our Energy Manager, Jim White, was presented with the 2012 BC Hydro Power Smart Torchbearer Award, the highest honour for an Energy Manager in our sector which recognizes individuals who are leaders in promoting:

- Strategic Energy Management;
- transforming the K-12 Education Sector by creating conservation cultures;
- and elevating the Energy Management Profession in BC



The graphic features the Delta School District logo (Inspired Learning) and the BC Hydro Power Smart logo at the top. Below the logos, a dark blue banner contains the text: "Delta School District leads the way in power savings! The Delta School District has been recognized as one of the Top Ten power saving organizations under BC Hydro's Power Smart Partner program." The main body of the graphic shows a photograph of a school building with a large digital meter overlaying the image. The meter is labeled "KILOWATTHOURS" and has several dials. Below the meter, the text "Last Year We Saved:" is followed by a list of achievements: 351,000 KWH by installing light activation sensors throughout the District; 256,000 KWH by making fan-adjustments throughout the District; 74,000 KWH by installing light activation sensors and fan motor rescheduling at two elementary schools; and 53,000 KWH by installing light activation sensors and light retrofitting at one elementary school and the board office. A final line states: "TOTAL: 734,000 KWH" = equivalent to powering 66 homes. At the bottom, a dark blue banner reads: "We are proud to be a BC Hydro Power Smart Partner!"

Delta School District Named to BC Hydro Power Smart Top Ten List

In October 2012, during PowerSmart Month, BC Hydro recognized the Delta School District as one of its Top 10 Power Saving Organizations under its PowerSmart Partners Program in 2011/2012. In that fiscal year, the school district completed energy conservation projects that were estimated to reduce 734,000 kWh per year. As a reward, the school district was given \$3,000 to spend in an advertisement to announce this great achievement.

Plans to Continue Reducing Greenhouse Gas Emissions 2013 - 2015

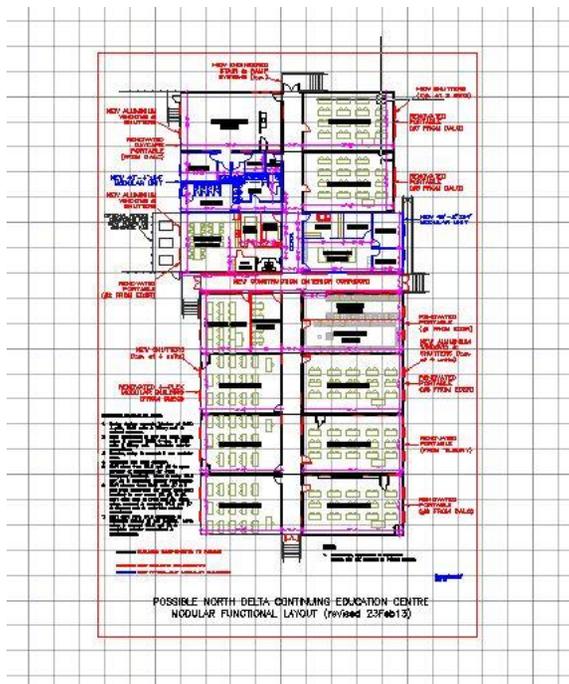
Over the next three years, the Delta School District plans to incorporate the following into the operations of the schools:

Hardwire Projects

High Efficiency/Energy Star

All equipment include appliances, computers are being replaced with high efficiency and/or Energy Star rated equipment when they have reached the end of their life.

Energy Efficiency copiers and printers are currently being installed to replace the old less efficient equipment throughout the district and the replacements should be completed by 2013.



North Delta Adult Learning Centre Replacement

The existing Adult Learning Centre in North Delta is going to be relocated from its home in a collection of antiquated portables at one secondary school site to a modular facility comprised of renovated and new units at a more central secondary school site in the North Delta community. This gives the school district an opportunity to implement green initiatives when constructing the facility, such as:

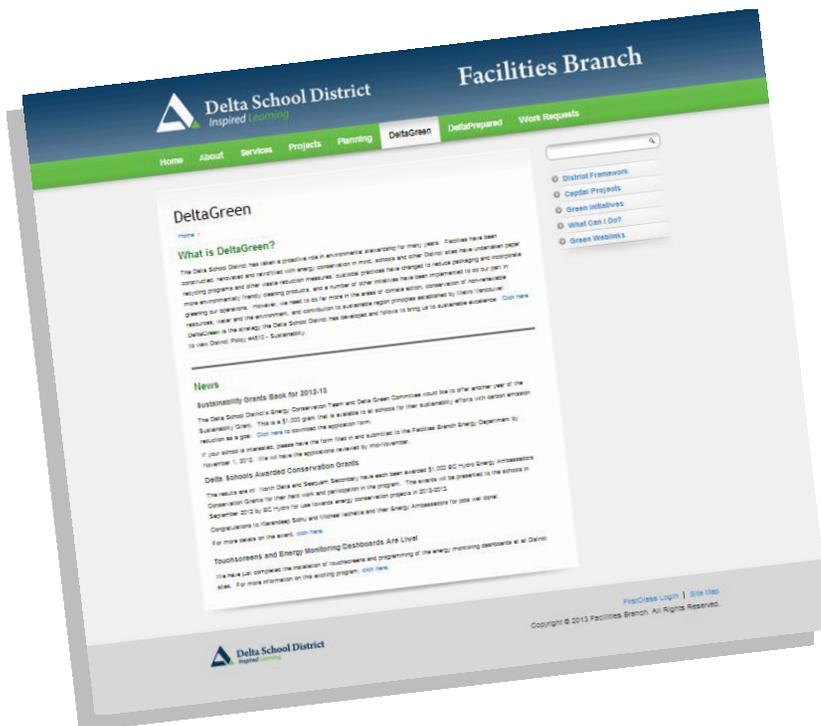
- Reuse of existing portables from other sites to minimize new material
- Improve exterior wall envelope to reduce heat loss
- Install low flow water fixtures
- Install efficient lighting fixtures with occupancy sensors
- Investigate in possible grey water washroom fixtures
- Demand control heating/ventilation or passive system

Behavioural Projects

Energy Educational Dashboard

In an effort to spread energy conservation awareness across the Delta School District, “energy dashboards” have been installed in all school district sites (schools, board office, resource centre and maintenance facility). The energy dashboard will have real-time electricity, natural gas and water consumption displayed on an interactive touch-screen located at the building entrance. The dashboards are learning tools that can also be accessed via the internet from classroom computers. In 2013, the energy dashboards will be introduced to staff and students and workshops will be launched site by site to ensure that they will be used.

Students currently study various environmental topics and undertake many green initiatives. The energy dashboards will be incorporated into the energy conservation practices already taking place. For example, students can turn off the lights and see an immediate drop in electricity consumption. Staff and students are encouraged to reduce their use of resources by turning off lights when not required, not letting the water tap run when not in use, unplugging equipment when not in use, and reducing photocopying. By introducing the dashboard, it quantifies and visualizes the efforts of staff and students to conserve energy. By seeing results, it would motivate the staff and students to continue their efforts.



Links to Other Publicly-Available Sustainability Information

The Delta School District has an updated website to share all of the green initiatives we are currently working on, future plans, sustainability information sources, green tips and school district-related sustainability news. The site also shines a spotlight on the students and schools that are heavily involved in the sustainability clubs and activities. To visit, go to <http://facilities.deltasd.bc.ca/deltagreen/>

School District 37 Delta - 2012 Carbon Neutral Action Report

Actions Towards Carbon Neutrality

The actions listed below contribute to a reduction in greenhouse gas emissions from sources for which public sector organizations are responsible under the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act.

Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Mobile Fuel Combustion (Fleet and other)					
Behaviour change program					
Provide fleet driver training to reduce fuel use	Not Yet Evaluated				No End Date (Continuous)
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Ongoing/In Progress	Directives issued to maintenance staff have been enforced, more signs erected at a number of school sites.	Due to budget restrictions, no new steps planned at this time.	2008	No End Date (Continuous)
Encourage carpooling in fleet vehicles	Not Yet Evaluated				No End Date (Continuous)
Vehicle fuel efficiency					
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	Purchased 4 newer flex fuel vans (with V6 engines) to replace 13 year old propane vehicles (with V8 engines) - vehicles are on 5 year lease to own agreements.	In 2013, a 5 ton truck and loader lease will expire. This would free up some of the budget to look at some newer fuel efficient vehicles but funds may need to be diverted to other needs.	2008	No End Date (Continuous)
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	"Right-sizing" principles were followed when selecting the 4 newer vans mentioned in vehicle fuel efficiency sub-section.	Due to budget restrictions, no steps planned at this time.	2009	No End Date (Continuous)
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	Regular maintenance programs have been established and are performed on all fleet vehicles by certified in-house technicians.	Continuation of program.	2008	No End Date (Continuous)
Stationary Fuel Combustion, Electricity					
Behaviour change program					
Help staff reduce personal energy use through ""workstation tune-ups""	In Development	8 sites participated in BC Hydro's Workplace Conservation Awareness (WCA) Program in 2012/13, including the Board Office and Delta Manor Education Centre. The WCA includes provisions for workstation tune-ups. Working out an agreement including contributions from the District and BC Hydro.	Sign the agreement with BC Hydro for the continuation of WCA program.	2010	No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress	Tips including unplugging electrical equipment and switching off power bars when not in use are posted on DeltaGreen website, with regular reminders sent out. The BC Hydro Workplace Conservation Awareness Program has been implemented to avoid phantom power.	Continue energy saving tips programs.	2008	No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress	Tips including unplugging electrical equipment and switching off power bars when not in use are posted on DeltaGreen website, with regular reminders sent out. The BC Hydro Workplace Conservation Awareness Program has been implemented to avoid phantom power.	Continue energy saving tips programs.	2008	No End Date (Continuous)
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Ongoing/In Progress	Custodians requested to close blinds, shutters and sliding panels after school/business hours.	Continue advocacy of procedure.	2008	No End Date (Continuous)
Encourage staff to use air dry setting on dishwashers	Not Yet Evaluated				No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress	Energy saving tips, including while in the office while working outside of regular business hours, are posted on DeltaGreen website, with regular reminders sent out. As part of the BC Hydro Workplace Conservation Awareness (WCA) program, staff have been spreading the word through full campaigns including signs, emails and prizes.	Continue energy saving tips and programs.	2008	No End Date (Continuous)
Encourage use of stairs instead of elevators	Not Yet Evaluated				No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress	Reminders to turn off lights are posted at light switches and on the	Continue awareness programs.	2008	No End Date

School District 37 Delta - 2012 Carbon Neutral Action Report

Actions Towards Carbon Neutrality					
The actions listed below contribute to a reduction in greenhouse gas emissions from sources for which public sector organizations are responsible under the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act.					
Action	Status	Steps Taken	Steps Planned	Start Year	End Year
	Progress	DeltaGreen website, with regular reminders sent out. Encouraged student audits of classrooms at recess and lunch, and tabulate lights left on or turned off. Lights out events are running in schools as part of the sustainability program grant program.			(Continuous)
Promote hot water conservation	Ongoing/In Progress	Hot water conservation tips are posted on DeltaGreen website under energy saving tips. Custodians use cold water chemical cleaners.	Continue energy saving tips program and advocacy.	2008	No End Date (Continuous)
IT power management					
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	Met with possible vendors to assess options available.	Review impact of software with server virtualization.	2008	No End Date (Continuous)
Implement server virtualization	Ongoing/In Progress	Worked with IBM to plan, design and specify server virtualization work.	Implement design.	2011	2014
Apply auto-sleep settings on computer monitors and CPUs	Completed (in Previous Year)				No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices as part of a print management strategy	Ongoing/In Progress	Reviewed the consultant's report to replace all network printer, fax machine and photocopier installations in the District and commenced the replacement project.	Complete installations including software and staff orientation.	2011	2013
Apply auto-sleep settings on printers, fax machines, and/or multi-function devices	Ongoing/In Progress	Auto-sleep has been incorporated into new multi-function devices currently being installed.	Complete installation of new equipment.	2008	2013
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress	All new computer installations are ENERGY STAR rated. On-going program whenever workstations or notebooks are replaced.	PCs or notebooks to be replaced with ENERGY STAR rated units only when they fail or are due for replacement. Highly dependent on Ministry/other funding and grants.	2008	No End Date (Continuous)
Other Stationary Fuel Combustion					
Installed interactive touchscreens at front entrance of 34 sites to display real-time metering of Electricity and Water, and monthly Natural Gas usage.	Ongoing/In Progress	Software leased and touchscreens installed complete with data wiring.	Installation of programming and final connections for online use.	2011	2014
Owned buildings					
Establish energy performance baseline for owned buildings	In Development	Our Energy Conservation Team is developing baselines for each site taking into account the consumption history, weather and days of school in session.	Complete the development of energy performance baselines and develop a system where the site occupants are held accountable for "out of the norm" overage of electrical baselines.	2012	2014
Register for performance labelling/certification for operations and maintenance of owned buildings (e.g., LEED EB:O&M)	Not Yet Evaluated				No End Date (Continuous)
Register for performance labelling/certification for commercial interiors of owned buildings (e.g., LEED CI)	Not Yet Evaluated				No End Date (Continuous)
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	Not Yet Evaluated				No End Date (Continuous)
Perform energy retrofits on existing, owned buildings	Ongoing/In Progress	Completed installation of occupancy sensors (turn off lights when unoccupied) in all buildings (except Delta Secondary): classrooms, offices, washrooms, storage rooms. Replaced classroom fixtures (2 lamp to 1 lamp fixtures) at 7 Elementary Schools (2 schools in 2011). Replaced 113 HID exterior light fixtures with induction and LED light fixtures at 11 elementary schools and 3 secondary schools. Completed replacement of boilers with energy efficient condensing boilers at 7 elementary schools. Retrofitted building management system controls with updated DDC systems at all sites. Installed real-time metering of electricity and water and energy dashboards at all sites. Commenced retrofit at 11 sites with geexchange heating	Continue partial retrofits towards eventual completion of whole buildings (highly dependent on Ministry/other funding). Complete occupancy sensor installation on unit ventilators (dependent on rebates/incentives available by FortisBC). Complete geexchange heating system installations at 11 sites.	2008	No End Date (Continuous)

School District 37 Delta - 2012 Carbon Neutral Action Report

Actions Towards Carbon Neutrality					
The actions listed below contribute to a reduction in greenhouse gas emissions from sources for which public sector organizations are responsible under the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act.					
Action	Status	Steps Taken	Steps Planned	Start Year	End Year
		systems, to be completed by 2013. Installed occupancy sensors to control unit ventilators at 3 more sites but will need to be incorporated in controls by 2013.			
Incorporate a refrigerant management strategy into regular building management/maintenance to reduce fugitive emissions	Not Yet Evaluated				No End Date (Continuous)
Planning/management					
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	Completed the installation of all electrical and water meters. Energy dashboards were installed at all sites, still working on bugs in the software.	Customize software applicable to a K-12 audience. Train staff and students to use the energy dashboards and encourage school projects using the data.	2009	2014
Retrofit details for owned buildings					
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	Completed replacement of boilers with energy efficient condensing boilers at 7 elementary schools. Retrofitted building management system controls with updated DDC systems at all sites. Commenced retrofit at 11 sites with geexchange heating systems, to be completed by 2013.	Continue partial retrofits towards completing whole buildings eventually (highly dependent on Ministry/other funding). Complete occupancy sensor installation on unit ventilators (dependent on rebates/incentives available by FortisBC). Complete installation and commissioning of geexchange heating systems at 11 sites.	2008	2014
Upgrade lighting systems during retrofits	Ongoing/In Progress	Completed installation of occupancy sensors (turn off lights when unoccupied) in all buildings (except Delta Secondary): classrooms, offices, washrooms, storage rooms. Replaced classroom fixtures (2 lamp to 1 lamp fixtures) at 7 Elementary Schools (2 schools in 2011). Replaced 113 HID exterior light fixtures with induction and LED light fixtures at 11 elementary schools and 3 secondary schools.	Continue to replace classroom 2 lamp fixtures with 1 lamp fixtures. Continue replacement of exterior light fixtures with induction and LED fixtures.	2008	No End Date (Continuous)
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	Completed installation of lighting occupancy sensors in all buildings (except Delta Secondary). Installed HVAC occupancy sensors for 3 sites while software will be updated by 2013.	Complete software upgrade to incorporate HVAC occupancy sensors. Install HVAC occupancy sensors at remaining sites.	2008	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	Purchased an infrared camera to find points of infiltration and determine building envelope performance.	Improve weather stripping. Potential projects under review. Retrofits highly dependent on Ministry/other funding and grants.	2010	No End Date (Continuous)
Supplies (Paper)					
Behaviour change program					
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Completed (in Previous Year)				No End Date (Continuous)
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	Ongoing/In Progress	Continued advocacy for the paperless initiative.	Continued advocacy for the paperless initiative.	2008	No End Date (Continuous)
Electronic media in place of paper					
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Completed (in Previous Year)				No End Date (Continuous)
Use electronic document library for filing common documents	Ongoing/In Progress	Continued to use District and school websites, intranet and collaborative software solutions for storage of frequently accessed documents (policies, procedures, forms, drawings, etc.).	Continued advocacy for the paperless initiative.	2008	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Completed (in Previous Year)				No End Date (Continuous)
Paper Type					
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	3% of all paper purchased has 30% recycled content.	Targeting 50% use of 30% recycled content paper.	2008	No End Date (Continuous)
Purchase 40% post-consumer recycled paper	Not Yet Evaluated				No End Date (Continuous)

School District 37 Delta - 2012 Carbon Neutral Action Report

Actions Towards Carbon Neutrality

The actions listed below contribute to a reduction in greenhouse gas emissions from sources for which public sector organizations are responsible under the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act.

Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Purchase 100% post-consumer recycled paper	Not Yet Evaluated				No End Date (Continuous)
Printer/document settings					
Switch networked printers and photocopiers to automatic double-sided	Ongoing/In Progress	The selected vendor supplying the new multi-function devices has pre-programmed double-sided copies as the default.	Complete installation of new equipment.	2011	2013

School District 37 Delta - 2012 Carbon Neutral Action Report

Actions to Reduce Provincial Emissions and Improve Sustainability

The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act. Public sector

Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Business Travel					
Behaviour change program					
Train staff in web-conferencing	Ongoing/In Progress	Trained as needed.	Trained as needed.	2008	No End Date (Continuous)
Encourage staff to consider virtual attendance/presentation at events where possible	Not Yet Evaluated				No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress	Continued advocacy for initiative.	Continued advocacy for initiative.	2008	No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Not Yet Evaluated				No End Date (Continuous)
Policy and budgeting					
Create a low-carbon travel policy or travel reduction goal	Not Yet Evaluated				No End Date (Continuous)
Virtual meeting technology					
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Ongoing/In Progress	New equipment installed in medium-sized conference rooms at the Board Office and Delta Manor Education Centre.	Installed as needed.	2008	No End Date (Continuous)
Make desktop web-cameras available to staff	Ongoing/In Progress	Installed as needed.	Installed as needed.	2008	No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	Ongoing/In Progress	Mobile unit available for booking from Provincial Outreach Program office at the Delta Manor Education Centre. Skype camera installed on monitor in DMEC Facilitation Room.	Installed as needed.	2008	No End Date (Continuous)
Education, Awareness, and Engagement					
Awards/Recognition					
Establish a sustainability/green awards or recognition program	Ongoing/In Progress	Continued the Sustainable Schools Program, with Green Teams submitting project proposals and, upon approval by the District Advisory Committee, schools awarded \$1,000 grants. BC Hydro also offers \$1,000 grants to selected schools in the Energy Ambassadors Program.	Continue and enhance existing programs and possibly start a scholarship program for students that demonstrate leadership in reducing their school's (and community's) carbon footprint, available funding dependent.	2009	No End Date (Continuous)
Staff Professional Development					
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress	PowerSmart workshops for staff at the Board Office, District Operations Centre, and site custodians. Provided on-going professional development to management and supervisory staff.	Continue to provide professional development and workshops as budget permits	2009	No End Date (Continuous)
Include green options in employee performance measurement system	Not Yet Evaluated				No End Date (Continuous)
Staff awareness/education					
Provide education to staff about the science of climate change	Ongoing/In Progress	Part of the science curricula at both elementary and secondary levels.	Continue and enhance program.	2010	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress	Provided schools with touchscreens containing an energy dashboard to see real-time usage of electricity and water. To see how they can conserve energy and water, tips are and links to on-line tools and programs are provided on the DeltaGreen website.	Continue to explore other educational programs and tools and suggest implementation to Learning Services and to schools.	2009	No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress	Annual newsletter sent out in September. Published tips in the DeltaGreen FirstClass conference and the DeltaGreen website. Green tips on screen saver of energy dashboard at all sites.	Maintain/enhance information on website and energy dashboards.	2009	No End Date (Continuous)

School District 37 Delta - 2012 Carbon Neutral Action Report

Actions to Reduce Provincial Emissions and Improve Sustainability					
The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act. Public sector					
Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Provide sustainability education during new staff orientation	Not Yet Evaluated				No End Date (Continuous)
Team-building					
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress	Maintained the DeltaGreen program - District Advisory Committee, site based Green Teams, 75% of schools are involved in various initiatives. Each of the 8 sites in the BC Hydro Workplace Conservation Awareness Program has a champion at each site responsible for leading and coordinating the site's green team.	Increase participation of schools to 100%.	2008	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Completed (in Previous Year)				No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress	BC Hydro Student Programs - Secondary Schools involved in the BC Hydro Energy Ambassadors program, presentations to Elementary Schools.	Continue with BC Hydro and District Student Programs.	2008	No End Date (Continuous)
Other Sustainability Actions					
Adaptation to Climate Change					
Assessed whether extreme weather events and/or long term changes in climate will affect the organization's business areas	In Development	As half of the Delta School District is at or below sea level (on a delta) and susceptible to flooding, the District is in communication with the Corporation of Delta to react to floods such as sandbagging, relocating critical functions to higher elevations and school closures.	Continue to develop the business continuity strategy.	2008	No End Date (Continuous)
Integrated considerations of extreme weather events and/or long term changes in climate into the organization's decision making.	In Development	District Emergency Preparedness Plan includes decision analysis in light of potential natural disasters (flood, windstorm, earthquake).	Continue to develop and enhance emergency preparedness.	2008	No End Date (Continuous)
Building construction, renovation					
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Completed (in Previous Year)				No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	Ongoing/In Progress	All Project Identification Reports (PIR) submitted to the Ministry of Education for Seismic Upgrades contained life cycle costing (LCC), minimizing demand on maintenance, i.e. material selections and wall/roof assembly selection are based on life expectancy.	When requested, continue to submit PIRs with LCC.	2009	No End Date (Continuous)
Commuting to and from home					
Introduce telework/work from home policy	In Development	Individual departments have their own informal telecommute policy for non-school applications.	Continue to study possible applications.	2012	No End Date (Continuous)
Encourage commuting by foot, bicycle, carpool or public transit	In Development	The BC Hydro Workplace Conservation Awareness Program was considering a bus pass as a prize for an energy conservation event, subject to available program funding.	Continue to research and possibly implement program.	2012	No End Date (Continuous)
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Completed (in Previous Year)				No End Date (Continuous)
Provide secure bicycle storage	Ongoing/In Progress	Provided upon request and subject to available funding.	Continue to implement program.	2008	No End Date (Continuous)
Procurement (non-paper supplies)					
Incorporate minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)	Not Yet Evaluated				No End Date (Continuous)
Establish green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)	Not Yet Evaluated				No End Date (Continuous)

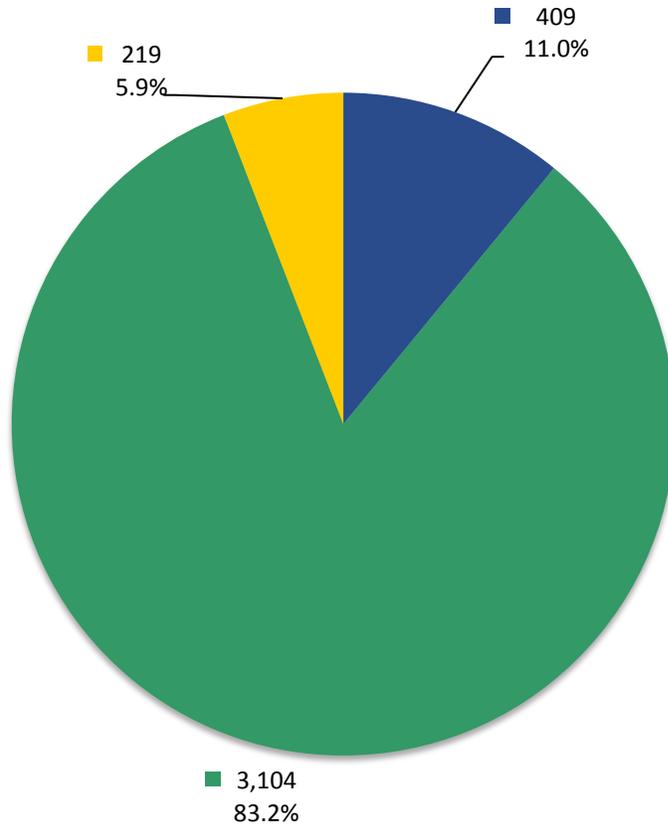
School District 37 Delta - 2012 Carbon Neutral Action Report

Actions to Reduce Provincial Emissions and Improve Sustainability

The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act. Public sector

Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	Ongoing/In Progress	Continued to use sustainable products (environmentally friendly, minimal packaging) in custodial operations.	Continue to implement program.	2008	No End Date (Continuous)
Waste reduction/diversion					
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	Ongoing/In Progress	Upheld the District Sustainability Policy regarding waste management and diversion. A number of schools have started a composting program and the majority of schools has recycling programs. Have been researching waste stations that include recycling bins, organic waste bin and garbage.	Purchase waste stations for pilot sites. Will explore other options for more cost effective options such as repurposing existing garbage bins into waste stations with paint and signage. Continue to support those sites with waste reduction programs and encourage others to adopt similar programs in preparation for the Metro Vancouver landfill ban on organics in 2015 as per its current Solid Waste Management Plan.	2008	No End Date (Continuous)
Implement a hazardous waste reduction and disposal strategy	Completed (in Previous Year)				No End Date (Continuous)
Water conservation					
Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models	Ongoing/In Progress	Continued to replace plumbing fixtures with more efficient units as they failed. Continued to explore options available. Installed water meters at 34 sites for real-time metering for energy dashboard and for DDC trending. Installed time-clock control of urinal flush where flush tanks used.	Touchscreen access to staff and students on real-time consumption. Real-time metering will identify over-usage or potential leakage. Fixtures to be replaced with more efficient units only when they fail. May review possibility of using newer technology in new North Delta Adult Education Centre.	2008	No End Date (Continuous)
Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features	Not Yet Evaluated				No End Date (Continuous)
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	Ongoing/In Progress	Continued installation of Rain Gardens at select schools in conjunction with the Corporation of Delta and Cougar Canyon Streamkeepers to divert stormwater out of storm sewers.	Continue program as opportunities arise and funding is available. May review possibility of using newer technology in new North Delta Adult Education Centre.	2008	No End Date (Continuous)

**School District 37 - Delta
Greenhouse Gas Emissions by Source
for the 2012 Calendar Year (tCO₂e*)**



Total Emissions: 3,733

- 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 2012 (Generated May 28, 2013 3:44 PM)

Total offsets required: **3,678**. Total offset investment: **\$91,950**. Emissions which do not require offsets: **55** **

*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.