

# Delta Board of Education - 2010 Carbon Neutral Action Report

## Executive Summary

In 2008, the Delta Board of Education embraced the concept of sustainability through the adoption of a District Sustainability Policy, which set as priorities: conservation, protection, education and regulation. The Board hired a full-time dedicated Energy Manager to oversee sustainable operations with a focus on carbon neutrality, energy conservation, awareness and reporting, and supported the creation of a District Sustainability Committee comprised of members from various stakeholder and partner groups.

Numerous initiatives stemming from the above Board actions are underway, including improved controls on lighting systems and replacement of incandescent fixtures with energy efficient fluorescent and LED products, "right sizing" fleet vehicles to reduce fuel consumption and CO<sub>2</sub>, replacement of 40% efficient gas-fired rooftop heating units with 300% efficient air source heat pumps, replacing conventional boilers with high efficiency condensing boilers, installing solar hot water heating systems, installing real-time metering so that staff and students can monitor energy consumption and make adjustments to reduce, construction of rain gardens, development of a "Sustainable Schools" program, and behavioural change. It is estimated that the various initiatives to reduce energy consumption and carbon footprint in Delta facilities alone have resulted in over 1,900 fewer tonnes of carbon dioxide emissions annually, compared to 2007 – a 37% decrease. The associated energy cost savings, environmental and social benefits to our school district have been significant – making our "DeltaGreen" program a major success.




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



The screenshot shows the DeltaGreen website interface. At the top, there is a navigation bar with tabs for DeltaGreen Home, District Framework, Capital Projects, Green Initiatives, What Can I Do?, Green Weblinks, and Facilities Home. The main content area features several articles, including 'DeltaGreen - What's New', 'Delta Partners with Terason Gas to Green-Up 19 Facilities', 'Delta Spotlighted in December 2010 Green Schools Newsletter!', 'Rain Gardens', and 'Workplace Conservation Energy Awareness Program'. A sidebar on the right contains 'Green News' and 'Green Games' sections. The footer includes the Delta School District logo and contact information.

## 2010 Greenhouse Gas Emissions

In 2010, carbon footprint of the Delta Board of Education as reported in SMARTTool was 4,060.78 tCO<sub>2</sub>e. The breakdown of sources is as follows:



**SMARTTool Greenhouse Gas Inventory Report**

Reporting Entity: School District 37 - Delta  
Reporting Year: Calendar Year 2010

Measure	Quantity	Greenhouse Gases in Tonnes				
		CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	tCO <sub>2</sub> e <sup>1</sup>	
<b>Scope 1 (Direct) Emissions</b>						
Mobile Combustion (Fleet)	Litres	196,555.35	350.84	0.07	0.02	359.69
Stationary Combustion, Reported <sup>3</sup>	GigaJoules	59,188.98	2,965.29	0.06	0.06	2,983.68
<b>Total Scope 1 Emissions</b>			<b>3,316.13</b>	<b>0.13</b>	<b>0.08</b>	<b>3,343.37</b>
<b>Scope 2 (Indirect) Emissions</b>						
Purchased Energy, Reported <sup>3</sup>	GigaJoules	35,895.40	247.68	0.00	0.00	247.68
<b>Total Scope 2 Emissions</b>			<b>247.68</b>	<b>0.00</b>	<b>0.00</b>	<b>247.68</b>
<b>Scope 3 (Business Travel and Office Paper) Emissions</b>						
Office Paper	Packages	64,035.00	437.23	0.00	0.00	437.23
<b>Total Scope 3 Emissions</b>			<b>437.23</b>	<b>0.00</b>	<b>0.00</b>	<b>437.23</b>
<b>Emissions from Biomass</b>						
<b>Total Biomass Emissions</b>			<b>32.51</b>	<b>0.00</b>	<b>0.00</b>	<b>32.51</b>
<b>Total Emissions, Calendar Year 2010</b>			<b>4,033.54</b>	<b>0.13</b>	<b>0.08</b>	<b>4,060.78</b>

1. Global Warming Potential (GWP) has been applied only to the tCO<sub>2</sub>e values.  
2. Estimated data has been calculated based on the methods described in the Methodology Document.  
3. Reported data refers to consumption which has been directly billed to the organization.

This information is provided by the Government of British Columbia, and is subject to verification.

The total emissions related to buildings only dropped from 4,715 tCO<sub>2</sub>e in 2009 to 3,232 tCO<sub>2</sub>e in 2010 (31%) due mostly to the replacement of 180 gas-fired rooftop heating units with 300% efficient air source heat pumps.

## Offsets Applied to Become Carbon Neutral in 2010

In order for the Delta Board of Education to become carbon neutral in 2010, \$112,262.36 (including HST) worth of carbon offsets, representing 4,009.37 tCO<sub>2</sub>e, were purchased from the Pacific Carbon Trust in March 2011. As required by Section 5 of the Carbon Neutral Government Regulation, 51.4 tCO<sub>2</sub>e of emissions resulting from the operation of Board-owned school buses were reported as part of our greenhouse gas emissions profile in 2010. However, these emissions were not offset as they are out-of-scope under Section 4(2)(c) of the Carbon Neutral Government Regulation.

## Actions Taken to Reduce Greenhouse Gas Emissions in 2010

The Delta Board of Education continued to take major strides in reducing greenhouse gas emissions in 2010. Projects of note include:

- A total of 83 antiquated gas-fired rooftop heating units were replaced at two schools with 300% efficient electric air source heat pumps with natural gas backup. Phase 1 of this program, consisting of 101 units, was completed in 2008 and Phase 2, consisting of 74 units, was completed in 2009.
- At four locations, antiquated, low efficiency conventional boilers were replaced with high efficiency condensing boilers.
- At three locations, solar hot water systems, complete with digital dashboard interface for staff and students to monitor performance, were installed to heat/pre-heat domestic hot water.
- Real-time electricity metering was installed at nine sites.
- Complete occupancy and other lighting control sensor systems were installed in 7 buildings.

In addition, 10 new fuel efficient mini cargo vans were ordered to replace older full-size propane vans in 2011, 11 schools participated in BC Hydro's Workplace Conservation Energy Awareness Program, Green Teams were established in almost all schools to enforce the message of "reduce, reuse, recycle", secondary schools continued their involvement in BC Hydro's Energy Ambassadors program and elementary schools participated in the BC Hydro Energy Detective Program Grades 1-3, an Energy Specialist (BCIT graduate in energy management funded by Terasen Gas) was hired as an additional resource person for schools, and the "DeltaGreen" website (<http://maint.deltasd.bc.ca/sustainability/>) was enhanced with more links to sustainability resources. Our Energy Manager continued to visit all schools and District sites to discuss energy conservation and GHG reduction with staff, with follow-up including action plans to take place in 2011/12. The Sustainable Schools program was continued to encourage schools to undertake one-time and on-going projects to conserve energy, reduce waste, compost and other green initiatives.

## Plans to Continue Reducing Greenhouse Gas Emissions 2011 – 2013

Our goal, in accordance with the Provincial Climate Change Action Plan, will be to continue to identify opportunities for: the reduction of GHG emissions in all aspects of our business, thus working towards carbon neutrality; the reduction of electricity consumption; and the implementation of alternative, "green" energy sources.

The Delta Board of Education has partnered with FortisBC (formerly Terasen Gas) to develop a program whereby a package of 19 District buildings would receive thermal energy retrofits over the next two years. Once complete, FortisBC would assume ownership of the new thermal plants, including operation and maintenance, and charge the Board a BCUC-approved tariff for thermal energy consumed. The project includes the replacement of conventional boilers with high efficiency, condensing boilers at eight sites, the conversion of existing thermal plants to state-of-the-art geo-exchange systems at 11 sites, and retrofit/replacement of existing mechanical infrastructure at all 19 sites to accept the new technologies. The estimated project budget is \$4.9 Million, with funding planned to come from three sources: FortisBC's Energy Efficiency and Conservation Program (\$0.8 Million), the Public Sector Energy Conservation Agreement (PSECA) Program (\$1.4 Million) and FortisBC Capital (\$2.7 Million). This will bring the entire active inventory of Delta Board of Education facilities up to optimal efficiency from a heating/cooling perspective.

We are planning to continue the retrofit of lighting systems and controls throughout our buildings as well as the installation of at least four more solar hot water heating systems.

Through our District Sustainability and DeltaGreen Advisory Committees, we will continue to advocate for: enhanced waste reduction; default two-sided copying at all locations; turning-off lights, electronics and appliances when not in use; re-use of non-confidential paper; electronic reports over paper reports; recyclable dishes and cutlery; reduction in packaging and recycling of cardboard; and other green initiatives.

We plan to conduct an audit to determine the level of participation throughout the District for energy conservation, waste reduction, carbon footprint reduction, etc.

We also plan to continue the Sustainable Schools Program, with financial support from the Board through energy cost savings.

# Delta Board of Education - 2010 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 <i>Greenhouse Gas Reduction Targets Act</i> .							
Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
<b>Mobile Fuel Combustion (Fleet and other mobile equipment)</b>							
<b>Vehicle fuel efficiency</b>							
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	33	% of vehicles are fuel- efficient models	Ordered 10 Dodge Caravan CV mini-vans to replace Dodge Ram vans (delivery in early 2011)	Due to budget restrictions, no steps planned at this time	2008	2011
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	30	% of vehicles down-sized since start year indicated	Ordered 10 Dodge Caravan CV mini-vans to replace Dodge Ram vans (delivery in early 2011)	Due to budget restrictions, no steps planned at this time	2009	2011
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Regular maintenance program established and performed on all fleet vehicles by certified in-house technicians	Continuation of program	2008	No End Date (Continuous)
<b>Behaviour change program</b>							
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Ongoing/In Progress	40	% observed reduction in vehicles (busses, private) idling while awaiting release of students for pickup and reduction in maintenance vehicles idling when stopped	Directives issued to maintenance staff enforced, more signs erected at a number of school sites	Additional installation of site signage and marketing of program to schools	2008	No End Date (Continuous)
<b>Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)</b>							
<b>Planning/management</b>							
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	29	% of buildings have a real time metering system installed	Installed electricity RTM at 9 sites (Burnsview, South Delta, Delta, Seaquam, North Delta, Sands and Delview Secondary Schools, Cougar Canyon Elementary School, and District Maintenance Facility)	Providing sufficient budget is available, expand program to as many as 10 more schools	2009	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	In Development	10	% of owned buildings have undergone energy retrofits since start year indicated	No complete energy retrofits in buildings, partial work only over the years (selective heating, lighting, controls)	Continue partial retrofits towards completing whole buildings eventually (highly dependent on Ministry/other funding)	1995	No End Date (Continuous)
<b>Retrofitting owned buildings</b>							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	41	% of retrofits since start year indicated had heating, cooling, and ventilation systems upgrades	Partial Only. Replaced 83 gas-fired rooftop heating units (60% efficient) with 350% efficient air source heat pumps c/w gas 2nd stage backup at Cougar Canyon and Seaquam. Replaced conventional boilers with high efficiency condensing boilers at Sunshine Hills, Devon Gardens and Pinewood Elementary Schools, and School Board Office. Installed solar hot water heating systems with a digital dashboard interface at Burnsview, Seaquam and Delta Secondary Schools.	\$5 Million thermal energy retrofit project involving 19 sites and three types of retrofit: closed loop geo-exchange, open loop geo-exchange and condensing boiler. Project partners are FortisBC and PSECA.	2008	2013
Upgrade lighting systems during retrofits	Ongoing/In Progress			Reduced number of fluorescent lamps in hallways while undertaking control upgrades (below)	Continue to upgrade hallway lighting and controls with high efficiency fixtures. Highly dependent on Ministry/other funding and grants	Started before 1995	No End Date (Continuous)

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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Upgrade/adjust control systems during retrofits	Ongoing/In Progress			Installed occupancy and other lighting control sensors in 7 buildings (Pinewood, Sunshine Hills, Cougar Canyon and Chalmers Elementary Schools, Burnsvew and Seaquam Secondary Schools, and School Board Office)	Continue program. Highly dependent on Ministry/other funding and grants	Started before 1995	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress			Replaced banks of windows at 2 schools (Heath & Chalmers Elementaries) with high efficiency, double glazed units.	In 2011, as part of building envelope remediation at Richardson Elementary, will upgrade insulation where practicable and replace old wood windows with new high efficiency, double glazed units. Other retrofits highly dependent on Ministry/other funding and grants	2010	2012
<b>IT power management</b>							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	65	% of computers shut down automatically outside of regular business hours	250 units installed with Faronics Power Save software. Approx 5000 units in District	Continue program where possible (some computers are too old/wrong OS to run the software)	2008	No End Date (Continuous)
Apply auto-sleep settings on printers, copiers, fax machines, and/or multi-function devices	Ongoing/In Progress	85	% of devices have auto-sleep settings applied	Continued programming where applicable	Continue program where possible (some units don't have the sleep mode capability)	2006	No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress			On-going program whenever PCs or notebooks replaced	PCs or notebooks to be replaced with ENERGY STAR units only when they fail	2009	No End Date (Continuous)
<b>Appliances and electronic devices</b>							
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress	35	% of fridges are ENERGY STAR rated	Refrigerators replaced with ENERGY STAR units as they failed	Refrigerators to be replaced with ENERGY STAR units only when they fail	1995	No End Date (Continuous)
Replace other appliances or electronic devices with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress			Appliances replaced with ENERGY STAR units as they failed	Appliances to be replaced with ENERGY STAR units only when they fail	1995	No End Date (Continuous)
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	Ongoing/In Progress			Bulbs and lamps replaced with CFL units as they failed	Bulbs and lamps to be replaced with CFL units when they fail	1995	No End Date (Continuous)
<b>Behaviour change program</b>							
Help staff reduce personal energy use through "workstation tune-ups"	Ongoing/In Progress			11 schools participated in BC Hydro's Workplace Conservation Energy Awareness Program - details contained here <a href="http://maint.deltasd.bc.ca/sustainability/documents/BC_Hydro_WCA_Pilot_Final.pdf">http://maint.deltasd.bc.ca/sustainability/documents/BC_Hydro_WCA_Pilot_Final.pdf</a>	Continue program and add more sites if approved by BC Hydro	2010	No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress			Posted on District Sustainability Website <a href="http://maint.deltasd.bc.ca/sustainability/">http://maint.deltasd.bc.ca/sustainability/</a> and intranet	Maintain/enhance information on website	2009	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	Continued advocacy	2008	No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress			Posted on District Sustainability Website	Maintain/enhance information on website	2009	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress	75	% of District facilities posting Turn It Off light switch stickers	Stickers supplied to all sites, information posted on District Sustainability Website, regular reminders sent out via e-mail	Remind schools to install stickers, improve compliance	2008	No End Date (Continuous)
Promote hot water conservation	Ongoing/In Progress			Posted on District Sustainability Website, Custodians using cold water chemical cleaners	Maintain/enhance information on website	2008	No End Date (Continuous)

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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
<b>Supplies (Paper)</b>							
<b>Paper Type</b>							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	30	% of total paper purchased contains 30% recycled content	Once existing paper stocks were depleted, replaced majority with 30% recycled content for general printing/copying	Targeting 90% use of 30% recycled content paper	2008	2012
<b>Electronic media in place of paper</b>							
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress	100	% of staff workstations with software installed	Using FirstClass enterprise software for e-mail, calendaring, task management, collaboration, conferencing, data storage and intranet	Looking to upgrade to latest version to enhance collaboration through social networking	2006	No End Date (Continuous)
Use electronic document library for filing common documents	Ongoing/In Progress			Continued to use District Websites and intranet for storage of frequently accessed documents (policies, procedures, forms, drawings, etc.)	Continued advocacy for initiative	2006	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress			All District Policies & Procedures, Emergency Preparedness Manual and other formerly printed documents now only available electronically	Aiming for job postings to eventually be only electronic, looking at other opportunities	2009	No End Date (Continuous)
<b>Behaviour change program</b>							
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	Ongoing/In Progress			Continued advocacy for initiative	Continued advocacy for initiative	2007	No End Date (Continuous)
Encourage re-use of scrap paper	Ongoing/In Progress			Continued advocacy for initiative	Continued advocacy for initiative	2003	No End Date (Continuous)

# Delta Board of Education - 2010 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 organizations can optionally use this section to report on actions that will help British Columbia meet its provincial greenhouse gas reduction targets, engage the public, and improve environmental sustainability across all aspects of their organization.

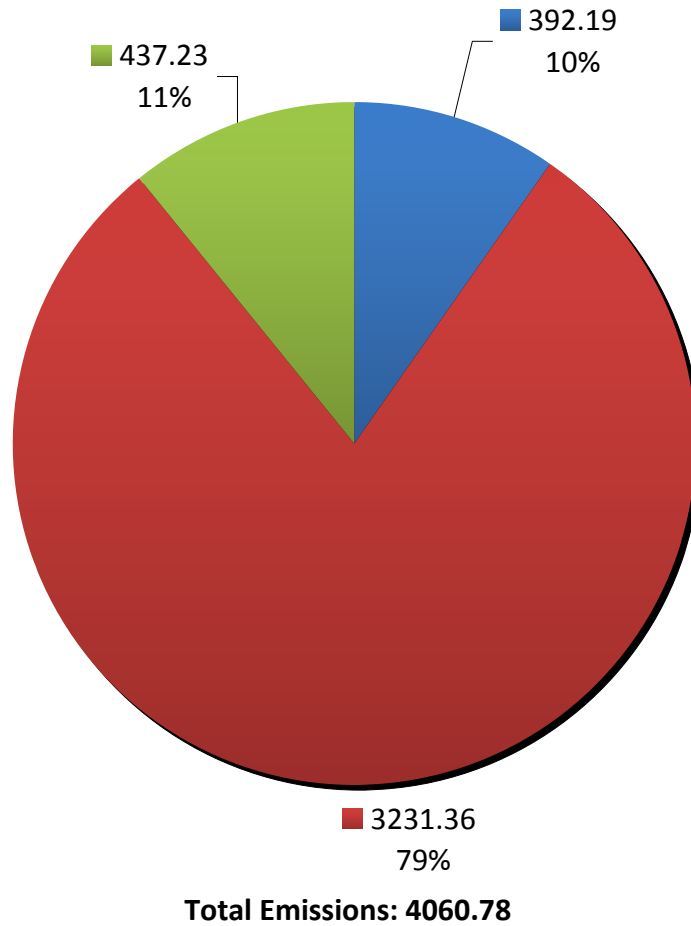
Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
<b>Business Travel</b>							
<b>Virtual meeting technology</b>							
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Ongoing/In Progress			Installed as needed	Installed as needed	2006	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)
<b>Behaviour change program</b>							
Train staff in web-conferencing	Ongoing/In Progress			Trained as needed	Training as needed	2008	No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress			Continued advocacy for initiative	Continued advocacy for initiative	2010	No End Date (Continuous)
<b>Education, Awareness, and Engagement</b>							
<b>Team-building</b>							
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress	80	% of Schools with some form of Green Team	Maintained DeltaGreen program - District Advisory Committee, site based Green Teams, 80% of schools are involved in various initiatives	Increase participation of schools to 100%	2008	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Completed in 2010			Added Terasen Gas-funded Energy Specialist to the team		2008	2010
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress			BC Hydro Student Programs - Secondary Schools involved in BC Hydro Energy Ambassadors program, Presentations to Elementary Schools. Elementary Schools involved in the BC Hydro Energy Detective Program Grades 1-3	Continue with BC Hydro and District Student Programs	2004	No End Date (Continuous)
<b>Awards/Recognition</b>							
Establish a sustainability/green awards or recognition program	Ongoing/In Progress	50	% of schools awarded sustainability grants	Continued Sustainable Schools Program, with Green Teams submitting project proposals and, upon approval by the District Advisory Committee, schools awarded \$1,000 grants	Continue and enhance program	2009	No End Date (Continuous)
<b>Staff Professional Development</b>							
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress			PowerSmart workshops for staff at Board Office, Operations Centre, Custodians, provided on-going Pro-D to management staff	Continue to provide Pro-D and workshops as budget permits	2009	No End Date (Continuous)
<b>Staff awareness/education</b>							
Provide education to staff about the science of climate change	Ongoing/In Progress			Part of 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 access to Utility Manager database for past utilities usage to see how they can conserve energy and water, provided tips and links to on-line tools and programs via Sustainability Website	Continue to explore other educational programs and tools and suggest implementation to Learning Services and schools	2009	No End Date (Continuous)



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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)	Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Provide green tips on staff website or in newsletters	Ongoing/In Progress		Published tips in DeltaGreen FirstClass conference and Sustainability Website	Maintain/enhance information on website	2009	No End Date (Continuous)
<b>Client/public awareness/education</b>						
Provide green tips on client/public website or in newsletters	Ongoing/In Progress		Published tips in DeltaGreen FirstClass conference and Sustainability Website	Maintain/enhance information on website	2009	No End Date (Continuous)
<b>Other Sustainability Actions</b>						
<b>Water conservation</b>						
Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models	Ongoing/In Progress		Fixtures replaced with more efficient units as they failed	Fixtures to be replaced with more efficient units only when they fail	2008	No End Date (Continuous)
<b>Waste reduction/diversion</b>						
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 District Sustainability Policy	Study and develop District Procedure	2009	2012
<b>Procurement (non-paper supplies)</b>						
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	2007	No End Date (Continuous)
<b>Building construction, renovation, and leasing</b>						
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Ongoing/In Progress		Policy not formalized, but practice in place to reduce construction waste and reuse materials wherever practicable.	Develop formal Departmental Policy	2008	2013
Incorporate lifecycle costing into new construction or renovations	Ongoing/In Progress		All Project Identification Reports submitted to the Ministry of Education for Seismic Upgrades contained life cycle costing	Continue to submit PIRs with LCC	2009	No End Date (Continuous)
<b>Indoor air quality</b>						
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	Ongoing/In Progress		Followed informal Departmental Policy for the purchase of paints and floor finishes	Continue to implement program	2004	No End Date (Continuous)

# Delta Board of Education Greenhouse Gas Emissions by Source for the 2010 Calendar Year (tCO<sub>2</sub>e\*)



- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion and Electricity (Buildings)
- Supplies (Paper)

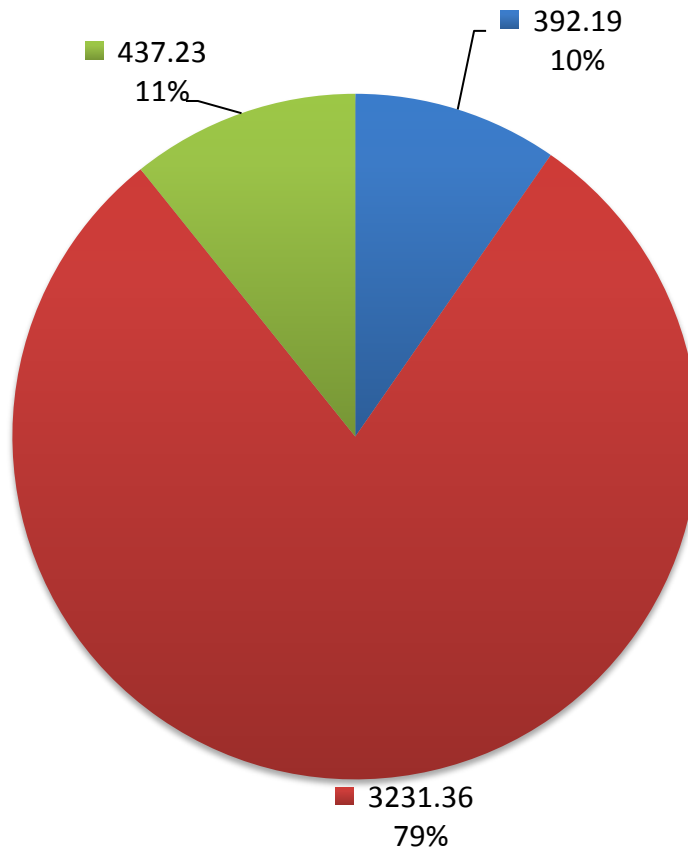
## Offsets Applied to Become Carbon Neutral in 2010

Total offsets purchased: **4009.38**. Total offset investment: **\$100,234.50**. Emissions which do not require offsets: **51.4** \*\*

\*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.

# Delta Board of Education Greenhouse Gas Emissions by Source for the 2010 Calendar Year (tCO<sub>2</sub>e\*)



**Total Emissions: 4060.78**

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion and Electricity (Buildings)
- Supplies (Paper)

## Offsets Applied to Become Carbon Neutral in 2010

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\*\* 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.

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## 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 (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
<b>Mobile Fuel Combustion (Fleet and other mobile equipment)</b>							
<b>Vehicle fuel efficiency</b>							
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	33	% of vehicles are fuel- efficient models	Ordered 10 Dodge Caravan CV mini-vans to replace Dodge Ram vans (delivery in early 2011)	Due to budget restrictions, no steps planned at this time	2008	2011
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	30	% of vehicles down-sized since start year indicated	Ordered 10 Dodge Caravan CV mini-vans to replace Dodge Ram vans (delivery in early 2011)	Due to budget restrictions, no steps planned at this time	2009	2011
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Regular maintenance program established and performed on all fleet vehicles by certified in-house technicians	Continuation of program	2008	No End Date (Continuous)
<b>Behaviour change program</b>							
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Ongoing/In Progress	40	% observed reduction in vehicles (buses, private) idling while awaiting release of students for pickup and reduction in maintenance vehicles idling when stopped	Directives issued to maintenance staff enforced, more signs erected at a number of school sites	Additional installation of site signage and marketing of program to schools	2008	No End Date (Continuous)
<b>Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)</b>							
<b>Planning/management</b>							
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	29	% of buildings have a real time metering system installed	Installed electricity RTM at 9 sites (Burnsview, South Delta, Delta, Seaquam, North Delta, Sands and Delview Secondary Schools, Cougar Canyon Elementary School, and District Maintenance Facility)	Providing sufficient budget is available, expand program to as many as 10 more schools	2009	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	In Development	10	% of owned buildings have undergone energy retrofits since start year indicated	No complete energy retrofits in buildings, partial work only over the years (selective heating, lighting, controls)	Continue partial retrofits towards completing whole buildings eventually (highly dependent on Ministry/other funding)	1995	No End Date (Continuous)
<b>Retrofitting owned buildings</b>							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	41	% of retrofits since start year indicated had heating, cooling, and ventilation systems upgrades	Partial Only. Replaced 83 gas-fired rooftop heating units (60% efficient) with 350% efficient air source heat pumps c/w gas 2nd stage backup at Cougar Canyon and Seaquam. Replaced conventional boilers with high efficiency condensing boilers at Sunshine Hills, Devon Gardens and Pinewood Elementary Schools, and School Board Office. Installed solar hot water heating systems with a digital dashboard interface at Burnsview, Seaquam and Delta Secondary Schools.	\$5 Million thermal energy retrofit project involving 19 sites and three types of retrofit: closed loop geo-exchange, open loop geo-exchange and condensing boiler. Project partners are FortisBC and PSECA.	2008	2013
Upgrade lighting systems during retrofits	Ongoing/In Progress			Reduced number of fluorescent lamps in hallways while undertaking control upgrades (below)	Continue to upgrade hallway lighting and controls with high efficiency fixtures. Highly dependent on Ministry/other funding and grants	Started before 1995	No End Date (Continuous)

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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Upgrade/adjust control systems during retrofits	Ongoing/In Progress			Installed occupancy and other lighting control sensors in 7 buildings (Pinewood, Sunshine Hills, Cougar Canyon and Chalmers Elementary Schools, Burnsvew and Seaquam Secondary Schools, and School Board Office)	Continue program. Highly dependent on Ministry/other funding and grants	Started before 1995	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress			Replaced banks of windows at 2 schools (Heath & Chalmers Elementaries) with high efficiency, double glazed units.	In 2011, as part of building envelope remediation at Richardson Elementary, will upgrade insulation where practicable and replace old wood windows with new high efficiency, double glazed units. Other retrofits highly dependent on Ministry/other funding and grants	2010	2012
<b>IT power management</b>							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	65	% of computers shut down automatically outside of regular business hours	250 units installed with Faronics Power Save software. Approx 5000 units in District	Continue program where possible (some computers are too old/wrong OS to run the software)	2008	No End Date (Continuous)
Apply auto-sleep settings on printers, copiers, fax machines, and/or multi-function devices	Ongoing/In Progress	85	% of devices have auto-sleep settings applied	Continued programming where applicable	Continue program where possible (some units don't have the sleep mode capability)	2006	No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress			On-going program whenever PCs or notebooks replaced	PCs or notebooks to be replaced with ENERGY STAR units only when they fail	2009	No End Date (Continuous)
<b>Appliances and electronic devices</b>							
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress	35	% of fridges are ENERGY STAR rated	Refrigerators replaced with ENERGY STAR units as they failed	Refrigerators to be replaced with ENERGY STAR units only when they fail	1995	No End Date (Continuous)
Replace other appliances or electronic devices with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress			Appliances replaced with ENERGY STAR units as they failed	Appliances to be replaced with ENERGY STAR units only when they fail	1995	No End Date (Continuous)
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	Ongoing/In Progress			Bulbs and lamps replaced with CFL units as they failed	Bulbs and lamps to be replaced with CFL units when they fail	1995	No End Date (Continuous)
<b>Behaviour change program</b>							
Help staff reduce personal energy use through "workstation tune-ups"	Ongoing/In Progress			11 schools participated in BC Hydro's Workplace Conservation Energy Awareness Program - details contained here <a href="http://maint.deltasd.bc.ca/sustainability/documents/BC_Hydro_WCA_Pilot_Final.pdf">http://maint.deltasd.bc.ca/sustainability/documents/BC_Hydro_WCA_Pilot_Final.pdf</a>	Continue program and add more sites if approved by BC Hydro	2010	No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress			Posted on District Sustainability Website <a href="http://maint.deltasd.bc.ca/sustainability/">http://maint.deltasd.bc.ca/sustainability/</a> and intranet	Maintain/enhance information on website	2009	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	Continued advocacy	2008	No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress			Posted on District Sustainability Website	Maintain/enhance information on website	2009	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress	75	% of District facilities posting Turn It Off light switch stickers	Stickers supplied to all sites, information posted on District Sustainability Website, regular reminders sent out via e-mail	Remind schools to install stickers, improve compliance	2008	No End Date (Continuous)
Promote hot water conservation	Ongoing/In Progress			Posted on District Sustainability Website, Custodians using cold water chemical cleaners	Maintain/enhance information on website	2008	No End Date (Continuous)

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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
<b>Supplies (Paper)</b>							
<b>Paper Type</b>							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	30	% of total paper purchased contains 30% recycled content	Once existing paper stocks were depleted, replaced majority with 30% recycled content for general printing/copying	Targeting 90% use of 30% recycled content paper	2008	2012
<b>Electronic media in place of paper</b>							
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress	100	% of staff workstations with software installed	Using FirstClass enterprise software for e-mail, calendaring, task management, collaboration, conferencing, data storage and intranet	Looking to upgrade to latest version to enhance collaboration through social networking	2006	No End Date (Continuous)
Use electronic document library for filing common documents	Ongoing/In Progress			Continued to use District Websites and intranet for storage of frequently accessed documents (policies, procedures, forms, drawings, etc.)	Continued advocacy for initiative	2006	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress			All District Policies & Procedures, Emergency Preparedness Manual and other formerly printed documents now only available electronically	Aiming for job postings to eventually be only electronic, looking at other opportunities	2009	No End Date (Continuous)
<b>Behaviour change program</b>							
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	Ongoing/In Progress			Continued advocacy for initiative	Continued advocacy for initiative	2007	No End Date (Continuous)
Encourage re-use of scrap paper	Ongoing/In Progress			Continued advocacy for initiative	Continued advocacy for initiative	2003	No End Date (Continuous)

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### 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 organizations can optionally use this section to report on actions that will help British Columbia meet its provincial greenhouse gas reduction targets, engage the public, and improve environmental sustainability across all aspects of their organization.

Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
<b>Business Travel</b>							
<b>Virtual meeting technology</b>							
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Ongoing/In Progress			Installed as needed	Installed as needed	2006	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)
<b>Behaviour change program</b>							
Train staff in web-conferencing	Ongoing/In Progress			Trained as needed	Training as needed	2008	No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress			Continued advocacy for initiative	Continued advocacy for initiative	2010	No End Date (Continuous)
<b>Education, Awareness, and Engagement</b>							
<b>Team-building</b>							
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress	80	% of Schools with some form of Green Team	Maintained DeltaGreen program - District Advisory Committee, site based Green Teams, 80% of schools are involved in various initiatives	Increase participation of schools to 100%	2008	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Completed in 2010			Added Terasen Gas-funded Energy Specialist to the team		2008	2010
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress			BC Hydro Student Programs - Secondary Schools involved in BC Hydro Energy Ambassadors program, Presentations to Elementary Schools. Elementary Schools involved in the BC Hydro Energy Detective Program Grades 1-3	Continue with BC Hydro and District Student Programs	2004	No End Date (Continuous)
<b>Awards/Recognition</b>							
Establish a sustainability/green awards or recognition program	Ongoing/In Progress	50	% of schools awarded sustainability grants	Continued Sustainable Schools Program, with Green Teams submitting project proposals and, upon approval by the District Advisory Committee, schools awarded \$1,000 grants	Continue and enhance program	2009	No End Date (Continuous)
<b>Staff Professional Development</b>							
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress			PowerSmart workshops for staff at Board Office, Operations Centre, Custodians, provided on-going Pro-D to management staff	Continue to provide Pro-D and workshops as budget permits	2009	No End Date (Continuous)
<b>Staff awareness/education</b>							
Provide education to staff about the science of climate change	Ongoing/In Progress			Part of 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 access to Utility Manager database for past utilities usage to see how they can conserve energy and water, provided tips and links to on-line tools and programs via Sustainability Website	Continue to explore other educational programs and tools and suggest implementation to Learning Services and schools	2009	No End Date (Continuous)

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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)	Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Provide green tips on staff website or in newsletters	Ongoing/In Progress		Published tips in DeltaGreen FirstClass conference and Sustainability Website	Maintain/enhance information on website	2009	No End Date (Continuous)
<b>Client/public awareness/education</b>						
Provide green tips on client/public website or in newsletters	Ongoing/In Progress		Published tips in DeltaGreen FirstClass conference and Sustainability Website	Maintain/enhance information on website	2009	No End Date (Continuous)
<b>Other Sustainability Actions</b>						
<b>Water conservation</b>						
Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models	Ongoing/In Progress		Fixtures replaced with more efficient units as they failed	Fixtures to be replaced with more efficient units only when they fail	2008	No End Date (Continuous)
<b>Waste reduction/diversion</b>						
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 District Sustainability Policy	Study and develop District Procedure	2009	2012
<b>Procurement (non-paper supplies)</b>						
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	2007	No End Date (Continuous)
<b>Building construction, renovation, and leasing</b>						
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Ongoing/In Progress		Policy not formalized, but practice in place to reduce construction waste and reuse materials wherever practicable.	Develop formal Departmental Policy	2008	2013
Incorporate lifecycle costing into new construction or renovations	Ongoing/In Progress		All Project Identification Reports submitted to the Ministry of Education for Seismic Upgrades contained life cycle costing	Continue to submit PIRs with LCC	2009	No End Date (Continuous)
<b>Indoor air quality</b>						
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	Ongoing/In Progress		Followed informal Departmental Policy for the purchase of paints and floor finishes	Continue to implement program	2004	No End Date (Continuous)