

# Carbon Neutral Action Report School District No. 79 (Cowichan Valley)

## Executive Summary

Reducing energy and fuel consumption has been an ongoing initiative of the Cowichan Valley School District for several years. Initially it was seen as a means of reducing operating expenses, but the considerable emphasis placed on reducing greenhouse gasses by public and private organizations, has shifted the District's emphasis to one of environmental stewardship.

In the last two years the Cowichan Valley School District has introduced a number of changes in an effort to minimize its carbon footprint and further reduce energy-related operating costs. These changes have been in the Maintenance, Transportation and Custodial departments.

### Maintenance

1. An energy manager was recently hired to provide ongoing analysis of systems and processes and make appropriate recommendations.
2. Lighting and heating upgrades including the installation of DDC controls at large sites, changing incandescent lights to T8s, installation of vending (venting?) misers.
3. Creation of work zones to reduce driving between work sites.

### Transportation

1. Initiated an anti-idling program.
2. Added sixth gear to buses to reduce RPM during highway driving.
3. Purchase of diagnostic software to eliminate the need for buses to be taken out of district for repair.

### Custodial

1. Cleaning products have been replaced by environmentally safe products.

### Future and Ongoing

1. Development of a policy on Resources and Sustainability.
2. Establishment of a Sustainability Committee.
3. Launch an awareness campaign to increase awareness of district initiatives and educate students and staff on how they can be involved.
4. Provide ongoing regular feedback to each school regarding consumption information.
5. Complete energy audits of six schools.
6. Installation of computer management software on 1600 systems to reduce power consumption.

## Part 1: Actions Taken to Reduce Greenhouse Gas Emissions in 2008

### Overview:

A three-part plan was implemented by the Transportation Department shop to reduce fuel consumption. In part one, the exhaust brake circuits were re-programmed; in part two, the transmissions were reprogrammed to utilize the sixth gear that was formerly left inactive; in part three, transmissions were reprogrammed to default to economy mode instead of performance mode. The result was that the buses operated at a lower RPM, which in turn results in less fuel consumed.

Reports were drawn using existing technology on the bus engines that showed driver performance. High speeds, prolonged idling periods, and undesirable fuel mileage could be brought to the driver's attention, and they were coached on achieving improved results.

Anti-idling policies and emission reduction were a part of every meeting and reminders were placed at every available opportunity. Individuals' driving practices were evaluated, with the focus on safe and practical driving which results in less fuel consumption.

The District had an Energy Management Assessment performed and from this an Energy Manager was hired and also, initiated energy audits for 6 schools. These energy audits will be complete in 2009 and will be the starting point for future energy retrofit projects.

A computer replacement program has been initiated so that they are replaced on a 4 year cycle. This ensures that old computers are being replaced with new, energy star computers. All vending machines with nonperishable items were put on vending misers.

Cardboard and paper recycling is being done at all sites. Composting is taking place at a number of sites currently and will be expanded to all sites.

### 1.1 Mobile Fuel Combustion

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Provided driver training to reduce fuel use	In Progress	Reduction in busing fuel costs through driver awareness.	Ongoing training on anti-idling and driving techniques to reduce fuel consumption.
Initiated new fleet maintenance program (could include – changing filters, checking tire pressure, regular check-ups)	In Progress	Information that is collected on buses is shared with staff, plans are put in place for improvement where possible.	Utilizing existing programs on bus engines to generate reports on mileage and fuel spent idling.
The wiring on the exhaust brake systems on the buses was re-configured so they would not activate automatically when drivers take their foot off the throttle.	Complete	Allows the buses to "coast" by giving the driver control over exhaust brake activation; it takes more fuel to regain speed from a stopped position, less if the bus is only slowed.	With manufacturer's input, modified the exhaust circuit wiring - driver turns the exhaust brake on or off as required - drivers were educated on this.
Transmissions re-programmed to take advantage of sixth gear feature.	Complete	Using sixth gear reduced the engine revolutions by about 550 RPMs - running slower at a given speed, buses burn less fuel.	It is the industry standard to only use five of the six gears, presumably because school bses rarely travel at high speeds. Re-programming made the sixth gear active.

Transmissions re-program from "Performance" default mode to "Economy"	Complete	When in Econo mode, the transmission shifts at a lower RPM, resulting in fuel savings when the engine runs slower.	Buses are delivered with the "Performance" default mode; "Econo" is only used manually. The supplier came in and re-programmed the engine to default to Econo. Drivers were educated on this.
Computerized Fuel Management System installed	Complete	Yearly comparisons to gauge performance.	Computerized system reduces driver recording errors and omissions.

## 1.2 Stationary fuel combustion and electricity

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Replaced # computers with EnergyStar models	In Progress	90% of machines will be at a current specification for a 4 year cycle.	Standardization of hardware across all schools that meets energy star standards.
Turned off lights in unused rooms	In Progress	Less rooms with lights on while unoccupied.	Through education and awareness this will increase throughout the district.
Replaced Refrigerators (EnergyStar rated appliance)	In Progress		As need arises.
Replaced other appliances (with EnergyStar rated appliance)	In Progress		As need arises.
Installed multi-function devices (and removed stand-alone printers/faxes)	In Progress	One machine running which will do the work of multiple machines.	New multi-function copiers - July 2009
Replaced standard bulbs with CFLs	In Progress	Reduction in energy consumption.	Most standard incandescent lights have been replaced. Replacing remaining incandescent lights with CFLs during regular maintenance.
Installed motion activated lights	In Progress	Less lights left on in unoccupied gyms. Reduction in energy consumption.	In as many gyms as practicle.
Undertaken lighting retrofit	Complete	Reduction in electrical Consumption.	Replace incandescent and T12 fluorescent fixtures with T8 Fluorescent fixtures in Duncan Elementary Gymnasiums.
Implemented server virtualization	In Progress	End users requiring multiple OS will have one machine with virtualization rather than two.	Movement to one standard platform, Apple, with Windows requirements virtualized as needed.
Utilized desk-top power management settings on computer	In Progress	Power management deployed across all instructional computer labs by September 2009	We will be deploying Faronics Power Save to reduce power consumption across computer labs.
Undertaken building energy audit at LOCATION(s)	In Progress	Audits to be used to identify future projects.	6 schools currently undergoing a detailed energy audit.

New Crofton School	Complete	Incorporates green initiatives, reduction of GHG's compared to old Crofton School.	Installation of a solar wall, lots of natural light in classrooms,natural gas boilers instead of old oil furnaces,use timeclock and photocell to control exterior lighting.
Duncan Elementary Gym	Complete	Reduction of electrical heating due to scheduling.	Add programmable thermostats to 12 KW of electric heat.

### 1.3. Supplies:

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Re-used non-confidential scrap paper	In Progress	Reduction in paper waste and cost savings.	Personal choice for a number of employees throughout the district.
<b>Actions on non-paper related supplies:</b>			
Purchased cradle to cradle goods	In Progress	Reduction in fuel costs for the district.	Office supplies are shipped directly to schools.
Encouraged re-use of furniture and equipment	In Progress	Cost savings to the district and less waste in the landfill.	Repair or fix old equipment for re-use.

### 1.4 Employee Engagement

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Undertake Energy Management Assesment	Complete	Promote awareness at management level. Enforce need for energy manager.	Assess state of energy management and awareness within the district.
Hire Energy Manager	Complete	Assess energy consumption. Establish energy awareness programs. Follow through on energy conservation projects.	Energy manager to work with other employees to initiate energy conservation measures.

### 1.5 Sustainability Actions (others)

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Took water conservation measures – low flow showers or toilets, fix leaks	In Progress	Reduction in water use and cost for the district.	Switching to low flow toilets and monitoring of water consumption throughout district.
Improved recycling measures	Complete	Less paper going to the landfill.	Ensure all sites have large recycling bins for paper and cardboard.
Supported composting	In Progress	Composted material can be reused and do not enter landfill.	A number of sites implemented a composting program with students/employees.
Used re-usable dishes	In Progress	Less paper and chemicals going to the landfill	Most sites do not use disposal plates/cups.
Purchased green cleaning products	In Progress	Reduction in chemicals for employees and environment.	Purchase of green custodial products started in 2007, program on going.

Used green (low-e paints)	In Progress	Reduction in chemicals for employees and environment	Use enviro paints whenever possible.
Supported sustainable procurement practices	In Progress	Less driving for transporting materials.	Shipping direct to schools.

## Part 2: Plans to Continue Reducing Greenhouse Gas Emissions 2009 -- 2011

### Overview:

In the Transportation Department, plans are to continue with monitoring and coaching for more fuel-efficient driving. Buying and using available tools will be the main focus; learning about and working with new engine technology will also realize a reduction in emissions.

A Sustainability Committee will be established. This committee will consist of members from all the different stakeholders in the district and will be responsible for developing and communicating behavior and awareness programs which will take place throughout the district.

For the 2009 year the district will install computer shutdown software on all computer labs, motion sensors for lights will be extended to changerooms and washrooms, and initiate a program to replace fuel oil fired furnaces with high efficiency natural gas furnaces. Begin the building energy retrofits based on the results of the energy audits.

### 2.1 Mobile Fuel Combustion

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
GPS	Planned	Deploy manpower based on proximity to location, reducing fuel used. Further reduce idling and wasted kilometers travelled.	Install GPS units on all buses and fleet vehicles. Pinpoint excessive idling locations and poor route choices to aid in coaching for efficient individual choices.	
Routing Reconfiguration	Planned	Travel less kilometers to deliver children to and from school.	Using routing program, reduce kilometers by maximizing travel.	

### 2.2 Stationary Fuel Combustion (including electricity)

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Undertake workstation tune-ups to help staff understand what they can do to reduce personal energy use	Planned		Awareness program through the Sustainability Committee.	2009-2010
Undertaken Monitor turn-off challenge	Planned		Awareness program through the Sustainability Committee.	2009-2010
Ask staff to close blinds daily	In Progress	Reduce heat lose or solar heat gain.	Making all aware of this not just the custodians.	2009

Use air dry setting on dishwashers	Planned		Awareness program through the Sustainability Committee.	2009
Install motion activated lights	Planned	Reduce unnecessary lighting and electrical consumption.	In changerooms and washrooms where appropriate.	2009-2011
Undertake lighting retrofit	Planned	This will be a district wide project which will reduce electrical consumption.	Change T12 fluorescents to T8 fluorescents and change standard T8 fluorescents to energy saving fluorescents where appropriate. Change metal halide fixtures to T5 fluorescent fixtures.	2009-2011
Initiate corporate computer shut-down/wake-up for maintenance	Planned	Reduce electrical consumption.	Software to be installed on 1600 computers across the district	Summer 2009
Unplug unused equipment	Planned	Reduce electrical consumption.	Awareness program through the Sustainability Committee	2009-2010
Undertake building energy audit at LOCATION(s)	Planned	Identify energy savings projects	Currently 6 schools are having energy audits done. Undertake energy audits in 6 additional schools.	2009-2010
Initiate or complete a building energy retrofit	Planned		Initiate energy retrofit based on energy audits performed.	2009-2011
Replace oil furnaces	Planned	New natural gas furnaces are more efficient and natural gas produces less GHG emissions.	Replace oil fired furnaces with Natural gas fired furnaces in 2 schools.	2009-2010

### 2.3 Employee Engagement

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Provide climate change education	Planned	Awareness of the problem is the first step to a solution.	Establishing a Sustainability Committee to work on awareness in all areas.	2009-2011
Provide conservation education	Planned	Make people aware of what they can do as individuals.	Establishing a Sustainability Committee to work on awareness in all areas.	2009-2011
Hold contests to change behaviour/make pledge	Planned	Friendly competition entices more participation. Signing a pledge deepens commitment.	Encourage friendly competition between schools. Reduction goals and achievements will be posted on district website.	2009-2011
Hold contests/support to generate ideas	Planned	Ideas from various groups encourages more buy in.	Sustainability Committee will solicit ideas from all areas.	2009-2011
Develop Green Teams	Planned	Teams will create on site awareness at all facilities.	Develop green teams within each school to lead conservation programs.	2009-2011

Support Green Teams (resources)	Planned	Easier access to resource materials for green teams.	Resources will be available through sustainability committee and energy manager.	on going
Provide green tips	Planned	New information maintains interest.	Tips will be posted on district website and distributed through Green Teams.	on going
Sign a Energy Conservation Pledge	In Progress	Show Senior Management commitment to energy conservation.	Have the Secretary-Treasurer sign a BC Hydro Power Smart Partner Energy Conservation Pledge.	Winter 2009
Create a Sustainability Committee	In Progress	This committee will encourage participation from all stake holders in the district.	Create a sustainability committee to develop energy awareness and environmental conservation programs.	2009

#### 2.4 Sustainability Actions (others)

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Run dishwasher only when full	Planned	Reduction in water	Awareness program through the Sustainability Committee	2009-2010
Improve recycling measures	Planned	Less materials going to the landfill	Work with Municipalities, Regional Districts and City to improve our recycling program.	2009-2011
Support composting	Planned	Keep compostable materials out of landfill.	Make composting a district wide program through the support of the Sustainability Committee.	2009-2011
Use re-usable dishes	In Progress	Reduce waste materials.	Awareness program through the Sustainability Committee	2009-2011