

Carbon Neutral Action Report School District No. 23 (Central Okanagan)

Executive Summary

School District No. 23 (SD23) is a progressive organization that has made great progress over a number of years towards carbon neutrality. SD 23 facilities have been organized under 5 year plans for lighting and mechanical system upgrades and this has been aggressively auctioned. All faculties utilize direct digital control systems for mechanical and lighting loads. Energy Management Guidelines have been in place for several years. SD23 has completed an ESCO and energy reduction targets have been met or exceeded.

In spite of the Central Okanagan being in a part of the province and environment that requires air conditioning for several months of months of the year - SD23 can boast very low cost per square meter for utilities at an average of \$10/sq m.

GPS is utilized in SD23 service fleet vehicles to help reduce idling time and to allow staff to take vehicles home - keeping additional vehicles off of the road and reducing asphalt parking requirements.

Charge sustaining hybrid, compressed natural gas fuel and propane fuel special education school buses are being operated.

Objectives

To try and impart an attitude of environmental awareness with the young people attending Central Okanagan schools schools

"To do the right thing to do for the environment, the Central Okanagan community and the planet"

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

Overview

In January 2008 SD23 commissioned the first charge sustaining hybrid electric school bus in Canada. An energy service conservation

The third district ground source heating system in operation was commissioned at Dr. Knox Middle School.

1.1 Mobile Fuel Combustion

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Replaced # of TYPE OF VEHICLE with MORE EFFICIENT VEHICLE/Hybrid	complete	Charge sustaining hybrid school bus - 71 % less ghg as compared to diesel equivalent - 19% fuel efficiency compared to equivalent diesel	Hybrid bus was compared to a similar diesel powered bus with the same operator over a prolonged period of time. The operator was coached on sustainable operating practices for both applications.
Provided driver training to reduce fuel use	in progress	NRCan Smart Driver Program for school bus drivers	3 staff trained as instructors - 53 drivers trained out of 80 total staff Dec-08

Initiated new fleet maintenance program (could include – changing filters, checking tire pressure, regular check-ups)	in progress		Comprehensive fleet maintenance program has been in place for many years (includes electronic work order system) - Entire fleet including school buses and service vehicles
Established anti-idling behaviour change program (e.g. signs, stickers, messages)	in progress	GPS monitoring of vehicle operation time - January 2008 idling time for 58 service vehicles at 254 hours. After employee awareness of the fact that the situation was being monitored and a reward was being offered idling time was reduced by 54% to a total of 118 hours for the same number of vehicles.	Service vehicle fleet idling reduction program implemented through GPS and reward incentive -
Encouraged car pooling in fleet vehicles	complete		Service vehicle operators have been offered the ability to take their vehicle to and from home -
Encouraged alternatives to travel in fleet vehicles – bicycles, scooters, electric carts		not applicable	
Changed from gas to electric lawn maintenance equipment		not applicable - (123 hectares of sports fields to maintain)	
Changed to manual lawn and yard maintenance equipment		not applicable	
Established travel reduction goals		Web based meetings conducted whenever feasible	
Adopted a travel policy	complete	Only one out of province Pro D trip per year.	

1.2 Stationary fuel combustion and electricity

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Supplied power bars – to turn off power to non-essential items when not in use (e.g. phone chargers)	completed		Power bars generally provided with computer stations - computer labs on master switches -
Replaced # computers with EnergyStar models	in progress		1250 replaced each year - 4000 out of a total of 5000 desktop computers have been upgraded including LCD monitors
Asked staff to close blinds daily	in progress		Roll shutters at 50% of district facilities - closed every evening and weekends
Turned off lights in unused rooms	in progress		Friendly fine to those that leave their lights on when unattended in Operations office group -
Installed multi-function devices (and removed stand-alone printers/faxes)	completed	In the process of removing 121 older MFD and replacing them with 102 more energy efficient MFD	Common fax, common printers, photo copiers are set up as the most well used printer -
Replaced standard bulbs with CFLs	in progress		LED emergency lighting - done portable exit lighting to be done
Installed motion activated lights	in progress		Direct digital control lighting, motion activated lighting controls at some locations -

Undertaken lighting retrofit	in progress	yes - majority of district has been retrofitted or delamped, etc. at least once and is being upgraded as technology improves -
Implemented server virtualization	completed	yes - Vmware on 60 servers -
Applied for LEED existing building rating	in progress	Yes, new Chute lake Elementary School -
Undertaken building energy audit at LOCATION(s)	completed	yes - Kelowna Secondary School -
Initiated or completed a building energy retrofit	completed	Ameresco energy performance contract -
	in progress	Infrared equipment to detect building envelope heat loss -
	in progress	Preventive maintenance on weather-stripping - continuous preventive maintenance activity
	in progress	Roll shutters installed at more than one half of district facilities - in progress

1.3 Supplies

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Initiated automatic double sided printing	in progress		Most schools follow this practice
Developed document library (online and one printed copy) for large documents	in progress		yes - Laser Fiche
Used laptops/tablets	in progress		5000 laptops in use (out of a total of 10,000 district computers) -
Actions on non-paper related supplies:			
Chose "Green" items from Distribution Centre	in progress		yes - green cleaning supplies -
Encouraged re-use of furniture and equipment	in progress		Some furniture and equipment recycled where possible. Old computers are salvaged for parts and useable components -
	in progress		Non bleached paper towels - can be composted -

1.4. Travel

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Installed Video Conferencing facilities	complete		Yes - Hollywood Road Education center
Initiated Travel Policy	in-progress		Limit of one out of province Pro D seminar.
Supported alternative travel (bike/skateboard/walk/transit) for meetings	in-progress		yes - walking school bus

1.5 Employee Engagement

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Provided climate change education	in-progress		Newsletter
Provided conservation education	in progress		Destination Conservation program at 12 schools - in progress
Held contests to change behaviour/make pledges	in progress		Anti-idling
Developed Green Teams	complete		Bike to work week supported at many district locations

Supported Green Teams (resources)		Provided partial savings to DC teams and supported initiatives. Each participating school received \$350 to use to support their Destination Conservation initiatives	MBSS requested and received funds to retrofit all female washrooms with motion sensor faucets.
Provided green tips	in progress		All custodians (120fte)- Training on chemical dilution system, green chemicals, auto scrubbers, backpack vacuums, - continuous process
Supported professional development	in progress		Certified Energy Manager training (CIET). Sustainable Operations Summit Vancouver
Added green work goal to performance management	in progress		"Sustainability Challenge" to Custodial Supervisor and Operations Manager Sustainability consulting coaches were engaged, waste stream audits conducted, composting pilot project planned

1.6 Sustainability Actions (others)

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Took water conservation measures – low flow showers or toilets, fix leaks	complete		
Reduced/replaced bottled water with filtered or refrigerated water	complete		Yes- Hollywood Education Center
Improved recycling measures	in progress	SD23 has reduced waste and recycled 92.5 metric tonnes of mixed paper and 132 metric tonnes of cardboard for 2008.	Paper products and cardboard currently recycled.
Supported composting	in progress		Pilot project @ secondary school campus Pilot composting project "rolled out" spring 2009 for full implementation and sustainability coaching fall 2009
Purchased green cleaning products	complete	SD23 reduced use of cleaning chemicals by 50% to date - further 30% possible	Boost chemical free cleaning system
Used green (low-e paints)	complete		
	in-progress		Waste stream audit secondary and elementary

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

Overview	Composting food and paper towel waste pilot project at Rutland Senior Secondary School -if successful this could have the impact of reducing 500 metric tonnes of waste from Kelowna landfills by 75% to 125 metric tonnes. Garbage truck operating hours would be 75% of school district waste to landfill (from 500 metric tonnes to 125 metric tonnes) - major advantage would be to increase student awareness
-----------------	--

2.1 Mobile Fuel Combustion

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Replace # of TYPE OF VEHICLE with MORE EFFICIENT VEHICLE/Hybrid	in progress	Hybrid, Propane, CNG school buses Hybrid - 71% less ghg than diesel CNG/propane approximately 25% less ghg than conventional diesel fuel but with a 4 year economic payback.		
Provide driver training to reduce fuel use	in progress	NRCAN Smart Driver training - 53 out of approximately 80 staff		
Initiate new fleet maintenance program (could include – changing filters, checking tire pressure, regular check-ups)	in progress	2000km service check school buses. 4000km diesel service fleet, 5000km gasoline service - in practice Continued excellent safety record, maximize fuel economy and reliability		
Establish anti-idling behaviour change program (e.g. signs, stickers, messages)	in progress		Drivers meetings, signage on school properties. Continue to remind and encourage people to shut off vehicles if stopped for 30 seconds or more	
Encourage car pooling in fleet vehicles	in progress		yes where staff working in crews	
Encourage use of public transit/active transportation	in progress		School bus system	
Change from gas to electric lawn maintenance equipment			Not realistic - only 18" electric mowers available - 123 hectares of sports fields requires industrial equipment (72" and 144" cut) in order to maintain safe, playable sports turf	
Change to manual lawn and yard maintenance equipment			123 hectares, not realistic - see above	
Establish travel reduction goals	in progress		Zone structure for trades to reduce the need for travel. School bus routes organized by region - Peachland, West Kelowna, Kelowna, Lake Country	

2.2 Stationary Fuel Combustion (including electricity)

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Supply power bars – to turn off power to non-essential items when not in use (e.g. phone chargers)	in-progress		Master switching in all computer labs	
Replace # computers with EnergyStar models	in-progress		yes - 4000 out of a total of 5000 desktops upgraded plus 5000 laptops	
Ask staff to close blinds daily	in-progress		yes - roll shutters in 50% of district facilities and are closed every evening and weekends	
Turn off lights in unused rooms	planned		Some occupancy sensors	
Install multi-function devices (and remove stand-alone printers/faxes)	in-progress		yes - bigger printers in common areas, students typically print to PDF as default	
Replace standard bulbs with CFLs	in-progress		LED exit lights,	

Install motion activated lights	in-progress	yes - DDC, motion activated systems
Undertake lighting retrofit	in-progress	Yes
Undertake building energy audit at LOCATION(s)	planned	KSS LEED for existing facilities
Initiate or complete a building energy retrofit	in-progress	Yes - continued focus on lighting and mechanical system retro-fits
Other	in progress	ESCO Ameresco

2.3 Supplies

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Initiate automatic double sided printing	planned		yes - common practice in schools	
Develop document library (online and one printed copy) for large documents	in-progress		yes - laser fiche	
Use laptops/tablets	in-progress		Yes - 50% of total of approximately 10,000 district computers are laptops. Policy to replace more existing desktop computers with laptops as part of refresh program	
Restructure a process to use less paper	in-progress	Current paper supply purchases amount to approximately 180 metric tonnes annually - increase awareness of re-use	More focus on re-using scrap paper	To be determined
Actions on non-paper related supplies:				
Encourage re-use of furniture and equipment	in-progress		Yes (current practice for furniture)	Current
Other	in-progress	Will be able to be composted because they contain no bleach residue	100% recycled content paper towels	2009
	in progress	Balance budget considerations and ability to operate with environmental concerns	Implement "green" purchasing policy	

2.4 Travel

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Train staff in the use of Live Meeting (or other desktop collaborative software)	in-progress		yes - Elluminate Live software	
Install Video Conferencing facilities	in-progress		yes- Poly Com on-line classes, Distance learning School utilizes streaming video	
Other	in-progress		School bus transportation system reduces the number of parent vehicles	

2.5 Employee Engagement

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Provide conservation education	in-progress		Destination Conservation program in place at 12 district facilities	
	in-progress		Idling reduction signage	
	in-progress		Sustainability section of district web page	
	in-progress		District Sustainability/ Energy Manager - Raise environmental awareness for students, staff, administration and the community.	2009 - 3 year term

2.6 Sustainability Actions (others)

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Take water conservation measures – low flow showers or toilets, fix leaks	in-progress		100 water closets upgraded to low-flow Sink faucets converted to low-flow (restrictors installed) Repair leaks, 21/2 gallon/minute flow restrictors in showers. Low flow toilets	Multi - year water closet replacement program (approximately 800 in total)
Reduce/replace bottled water with filtered or refrigerated water	in-progress		Yes - Hollywood Road Education Center (current practice)	
Improve recycling measures	in-progress		Pilot project for composting food waste/paper towels/wood shop sawdust. Recycle all plastics and tins (as well as paper and cardboard) through co-mingling recycling. Purchase/lease cardboard compaction unit to allow expanded use of existing 6 cubic yard Haul-All bin system. Purchase chipper to process industrial education shop wood (which could then be composted. Re-use wooden pallets (community contacts, other businesses)	2009
Support composting	In-progress		Pilot project - Initial concept for 1600 student secondary school including teaching kitchen. If successful composting units would handle up to 200 pounds of daily food waste (which could include adjoining middle school and neighbourhood elementary schools	spring 2009 start-up, functional for September 2009
Use re-usable dishes	in-progress	Eliminate Styrofoam garbage	Paper recyclable/compostable plates used at Hollywood Education Center	
Purchase green cleaning products		SD23 has already reduced chemical use by close to 50% from earlier years - with Boost system chemical use should be reduced by a further 30%	Yes, microfiber cloths, Boost chemical free system, certified green sealed chemicals, ecologo certified paper tissue and towels	2009 and beyond
Use green (low-e paints)	in-progress		Yes -current established practice	

ADDITIONAL ACTIONS TAKEN OR PLANNED

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
All the above	Planned		Hire an Energy and Sustainability Manager. Grants and energy savings to more than offset salary and benefits.	July 1, 2009 through June 30, 2010
2.6 Sustainability	Planned		Geothermal retrofits MBSS and HE initially being investigated. Investigating using third party capital (Terasen) to install geothermal heating and coiling systems at two existing schools	