Executive Summary

In 2009, SD 23 continued to address the reduction of greenhouse gas emissions through a variety of initiatives. A new elementary school was completed to the equivalent of LEED silver standards, incorporating geoexchange heating and photovoltaic electricity production and many facilities saw improvements to existing mechanical and electrical systems. Specifically, plans were initiated to upgrade the heating plant at Helen Gorman Elementary to geothermal. The district participated in the LEED Canada Initiative Pilot Project to compare energy and water consumption with districts across the country. Transportation staff focussed on replacing older fleet vehicles and converting others to CNG operation. A Sustainability Manager was hired to develop and implement new actions and coordinate those already in progress. Teachers and students participated in the Destination Conservation program, working specifically to reduce district energy, water and waste consumption. A water conservation plan was initiated, in tandem with our multiple water purveyors, as a direct result of a particularly dry summer. Earth tubs were installed at Rutland Secondary to facilitate the start of a multi-site composting project.

Overviews

Actions Taken to Reduce Greenhouse Gas Emissions in 2009

Energy

- General lighting improvements and delamping at Casorso, Pearson, Peachland, Bankhead, Quigley, Belgo, Hudson Rd, Shannon Lake, Rutland, AS Matheson and South Kelowna Elementary schools
- LED Emergency lighting
- Direct digital and motion activated lighting control
- Upgrades to desktop computers including LCD monitors
- Geo-exchange heating to reduce natural gas consumption at Chute Lake Elementary
- Photovoltaic panels to reduce electricity consumption at Chute Lake Elementary
- Destination Conservation 8 schools participating in the instruction of students, teachers and custodians with respect to energy, water and waste reduction opportunities
- Benchmarking of schools energy consumption through Canada Green Building Council LEED Pilot Project
- HVAC system upgrades at Springvalley Middle, Okanagan Mission Secondary, Quigley and Oyama Traditional schools
- Roofing improvements at Dorothea Walker, Glenrosa, KLO Middle and Rose Valley Elementary schools

Sustainability

- Sustainability Manager hired to develop initiatives and capitalize on available incentive programs
- New school construction completion, Chute Lake Elementary, equivalent to LEED Silver standards
- Purchase of two compressed natural gas, CNG, buses to replace diesel models

- Replacement of older fleet vehicles
- Composting pilot program implemented at Rutland Senior Secondary
- Water conservation initiatives at schools supplied by Westbank Irrigation District
- Irrigation system improvements at North Glenmore Elementary school

Operational Changes in 2009

 Sustainability Manager hired to focus on water and energy conservation and capitalize on available government and utility incentive programs

Plans to Continue Reducing Greenhouse Gas Emissions 2010 – 2012

- Continue Energy Conservation Committee composed of the utility sector and district staff with the mandate to share energy ideas and lay out framework for future energy projects
- Install solar DHW heating system at Rutland Senior Secondary using provincial and federal incentives through Solar BC
- Upgrade existing gas fired heating systems to geo-exchange at Helen Gorman Elementary using third party capital and incentive funding through provincial EEMU Program
- Create a complete lighting inventory of all school buildings. Use this inventory list to identify and plan for future lighting upgrade projects using provincial grants offered by PSECA.
- Investigate LEED Existing Building rating at Kelowna Senior Secondary
- Address the Destination Conservation program to challenge other schools to become involved.
- Develop a Sustainability Policy and Regulations for SD23.
- Work with Career Planning to develop a Sustainability Conference in the fall
- Build on the success of pilot composting projects to implement district wide
- Enhance current recycling program to full co-mingling
- Purchase or convert additional fleet vehicles to CNG
- Develop water conservation plan including review of irrigation practices and landscaping standards
- Continue to upgrade water closets and sink faucets to low flow operation
- Install computer shut-down software across the district
- Develop and implement general "green purchasing" policy within Finance
- Develop a sustainability link on the SD23 website
- Investigate paperless school board meetings
- SMARTTool deployment

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 12/31/09)		Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Mobile Fuel Combustion (Fleet and other mobile equip	ment)						
Vehicle fuel efficiency							
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	5	% of vehicles are fuel- efficient models	1 propane, 2 CNG buses operational	2010: Convert one of two district waste vehicles to NG	2008	No End Date (Continuous)
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	2	% of vehicles down-sized since start year indicated	Smaller buses used on routes where appropriate	2010: Additional vehicles right-sized as older models sold	2007	No End Date (Continuous)
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Ongoing regularly scheduled maintenance program, inhouse facilities and mechanics	2010: Ongoing, regularly scheduled maintenance	2000	No End Date (Continuous)
Replace small maintenance vehicles with more fuel-efficient models	Ongoing/In Progress	2	% of small maintenance vehicles are fuel-efficient	Older service vehicles sold and replaced with newer models	2010: 6 older buses to be sold	2003	No End Date (Continuous)
Behaviour change program							
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	80	% of current drivers are trained	Ongoing NRCan training program to educate new drivers	2010-2012: New drivers trained	2005	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			Ongoing program with training, signage monitoring and incentives	2010: Continue anti-idling program	2005	No End Date (Continuous)
Encourage carpooling in fleet vehicles	Ongoing/In Progress			Vehicle and buspooling encouraged where appropriate	2010-2012: Ongoing	2006	No End Date (Continuous)
Promote alternatives to fleet vehicle travel where possible (e.g., bicycles, public transit, walking)	Ongoing/In Progress			Multiple school programs, bike to school, walk to school, walking school bus	2010-2012: Encourage federal, provincial, municipal programs	2003	No End Date (Continuous)
Other Mobile Fuel Combustion Actions							
GPS monitoring of fleet vehicle run time	Ongoing/In Progress			Ongoing monthly review and reporting	2010: Continue program	2006	No End Date (Continuous)
Diesel multi-stage filter muffler	Ongoing/In Progress	8	% of buses with mufflers installed	5 buses retrofitted	2010: 12 additional buses planned as funding permits	2008	2012
CCV, crankcase ventilation kit	Ongoing/In Progress	20	% of buses with CCV kit installed	Additional buses identified	2010: Additional kits installed as provincial program allows	2006	2011
NGV engine operation and maintenance training	In Development				2010: Training proposed for SD23 mechanics	2009	2010
Maintenance zones and school bus routes redesigned to reduce travel	Complete			Program completed		2007	2009
Stationary Fuel Combustion, Electricity and Fugitive En	nissions (Buildings)						
Planning/management							
Enrol in a building energy benchmarking program (e.g., GREEN UP)	Ongoing/In Progress	22	% of schools benchmarked by LEED Pilot Project	SD23 participated in LEED Canada Initiative Pilot Project	2010: Inhouse energy benchmarking of all facilities based on utility tracking software	2008	2010

Action	Status (as of 12/31/09)		Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	60	% of buildings have a real time metering system installed	Large natural gas use sites have pulse compatible meters	2010-2012: All new sites to have real time meters	2005	No End Date (Continuous)
Owned buildings							
Establish energy performance baseline for owned buildings	Complete	100	% of owned buildings have an established energy performance baseline	Baseline established using inhouse utility tracking system; results compared with LEED Pilot Program, Schools		2003	2009
Register for performance labelling/certification for operations and maintenance of owned buildings (e.g., LEED EB:O&M)	In Development				2010: Consider Kelowna Secondary, Rutland Elementary for LEED EB rating	2010	No End Date (Continuous)
Incorporate integrated design process into new construction or during renovations of owned buildings	Ongoing/In Progress	1	% of buildings built or renovated since start year indicated used the integrated design process	Chute Lake Elementary School built to LEED Silver standards	2010: Portables installed to accommodate full day kindergarten	2007	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	Ongoing/In Progress	85	% of owned buildings have undergone energy retrofits since start year indicated	HVAC, lighting upgrades completed at multiple locations, Energy Conservation Committee	2010: HVAC, lighting upgrades, solar DHW preheat	2002	No End Date (Continuous)
Retrofitting owned buildings							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	65	% of retrofits (captured above) had heating, cooling, and ventilation systems upgrades	Mechanical system upgrades at 3 locations	2010: HVAC upgrades, 2 locations	2003	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	80	% of retrofits (captured above) had lighting systems upgrades	Lighting systems upgrades at 4 locations	2010: Lighting upgrades, 3 locations, LED exit lights for portables	2003	No End Date (Continuous)
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	60	% of retrofits (captured above) had control system upgrades or adjustments	DDC upgrades, motion sensors, CO2 sensors installed	2010: BC Hydro Continuous Optimization Program	2004	2012
Install an on-site renewable energy demonstration project	Ongoing/In Progress	5	% of retrofits (captured above) had on-site renewable energy components	Solar PV and geoexchange system at Chute Lake Elementary	2010: Geoexchange system at Helen Gorman Elementary, solar DHW at Rutland Secondary	2008	No End Date (Continuous)
IT power management							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	40	% of computers shut down automatically outside of regular business hours	Used Faronics DeepFreeze shutdown and Windows scheduled tasks to shut down computers.	2010: Implement/install Faronics PowerSave software on workstations which allows central management of shut downs and power management profiles. Will continue installation for all workstations.	2009	No End Date (Continuous)
Implement server virtualization	Ongoing/In Progress	50	% of servers have been virtualized since start year indicated	Moved physical servers to virtual server environment. Any new servers that could be implemented on a virtual server were.	2010: Continue to move as many existing physical servers and new servers to the virtual environment, mainly in the Data Centre. Due to low bandwidth between schools and Data Centre, schools still need local servers.	2005	No End Date (Continuous)
Apply auto-sleep settings on computer monitors and CPUs	Ongoing/In Progress	15	% of computers have auto-sleep settings applied	Investigated Faronics PowerSave software.	2010: Implement Faronics PowerSave software on workstations.	2009	No End Date (Continuous)

Action	Status (as of 12/31/09)		Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Ongoing/In Progress	20	% reduction in printers, copiers, and/or fax machines since start year indicated	Secured a 3 year lease contract for multi-function photocopier/printers to reduce printer numbers as well as print costs. Implemented print/copy tracking software and user quotas to track paper and photocopy/print costs.	2010: Recommend users direct printing to multi-function photocopier/printers to reduce costs. Continue to recommend high-end network printers (when required) over personal printers.	2004	No End Date (Continuous)
Apply auto-sleep settings on printers, copiers, fax machines, and/or multi-function devices	Ongoing/In Progress	90	% of devices have auto-sleep settings applied	Auto-sleep settings applied to new equipment	2010: Setup printers and copiers with auto-sleep settings applied.	2008	No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress	100	% of computers are ENERGY STAR rated	Lenovo won RFP for purchase of workstations and laptops for 3 years. Products have an Energy Star 4.0 and higher rating.	2010: Purchase Lenovo workstations and laptops. Continue to purchase IBM servers and blades.	2005	No End Date (Continuous)
Appliances and electronic devices							
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	In Development			Appliances purchased with school funds	2010: Establish standards and practices for appliance purchases	2011	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			Electronic devices upgraded to ENERGY STAR models	2010-2012: Continue to upgrade other appliances	2005	No End Date (Continuous)
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	In Development				2010: Establish standards and practices for desk lamps	2010	2012
Behaviour change program							
Help staff reduce personal energy use through "workstation tune-ups"	In Development				2010: Power management settings to be deployed via Faronics PowerSave software.	2010	No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress			Master shut-off switch for computer labs	2010-2012: Ongoing program	2004	No End Date (Continuous)
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Ongoing/In Progress			Roll shutters installed at multiple sites, shutters and blinds closed at end of work day	2010: Rollshutters as funding allows	2004	No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress			Destination Conservation program, Energy module	2010: Renew DC funding and program	2005	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress	75	% of schools with light switch stickers	Friendly fine program in Operations when staff leave lights on	2010: Environmental Sustainabilty regulations	2006	2011
Promote hot water conservation	Ongoing/In Progress			Destination Conservation program, Water module	2010: Renew DC funding and program	2005	No End Date (Continuous)
Other Stationary Fuel Combustion and Electricity Actions							
Infrared equipment used to detect building envelope heat loss	In Development				2010: Building heat loss study	2010	No End Date (Continuous)
Exterior roll shutters installed	Ongoing/In Progress	50	% of facilities with roll shutters installed	Continuation of program to install roll shutters at schools where risk of vandalism is high	2010-2012: Continue program as funding allows	2005	2012
Supplies (Paper)							
Paper Type							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	14	% of total paper purchased contains 30% recycled content	Paper purchases tendered annually, more recycled material purchased in '09	Review other paper supply options eg. truckload tenders	2006	No End Date (Continuous)

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Purchase 100% post-consumer recycled paper	In Development			Currently not economically feasible	2011	2012
Printer/document settings						
Switch networked printers and photocopiers to automatic double- sided	Ongoing/In Progress	% of network printers or 10 photocopiers are set to automatic double-sided	Print drivers on new computers set to double-sided printing as default	2010-2012: Print drivers on new computers set to double-sided printing	2009	No End Date (Continuous)
Apply "print and hold" settings to networked printers to eliminate unclaimed print jobs	Ongoing/In Progress	% of network printers have 'print and hold' settings applied	New printers set to "print and hold"	2010-2012: New printers set to "print and hold"	2009	2012
Reduce default margin size in standard document templates (e.g., letters, briefing notes, forms, etc.)	In Development			equipment setting	2010	No End Date (Continuous)
Electronic media in place of paper						
Use electronic document library for filing common documents	Ongoing/In Progress		Departments using laser fiche for documents eg. Human Resources	2010: Consider electronic library for Operations, laser fiche	2007	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress		Many internal and external documents now online	Continue to move documents online	2006	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Complete		Electronic system in place		2008	2009
Behaviour change program						
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	Ongoing/In Progress		Chair of Operations monthly meeting encouraged to go paperless	2011: Paperless school board meetings	2008	2012
Encourage re-use of scrap paper	Ongoing/In Progress		Scrap paper re-used	2010: Ongoing	2005	No End Date (Continuous)
Other Paper Supplies Actions						
Use of non bleached paper towels	Complete		District wide implementation; Ecologo certified		2009	2010
Develop "green purchasing" policy	In Development		-	2010: Develop and implement policy	2009	2010

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 12/31/09)		Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Business Travel							
Policy and budgeting							
Create a low-carbon travel policy or travel reduction goal	In Development				Planned for Environmental Policy regulations	2010	No End Date (Continuous)
Virtual meeting technology							
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	Ongoing/In Progress	10	% of meeting rooms have access to video-conferencing equipment	Video conferencing units available at Hollywood Rd Education Centre	additional equipment planned	2006	No End Date (Continuous)
Behaviour change program							
Train staff in video-conferencing or provide technical support for video-conferencing set-up	Ongoing/In Progress	5	% of staff are trained in video- conferencing or have access to technical support	Staff at Hollywood Rd Education Centre	additional training planned	2006	No End Date (Continuous)
Encourage staff to consider virtual attendance/presentation at events where possible	Ongoing/In Progress			Limit of one out of province trip annually	policy continued	2003	No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress			Car and buspooling encouraged to district meetings	policy continued	2004	No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Ongoing/In Progress			Students encouraged to walk, ride, roll to school	policy continued	2002	No End Date (Continuous)
Education, Awareness, and Engagement							
Team-building							
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress			Destination Conservation teams, Energy Conservation Committee in place	Environmental Sustainability Task Force in support of policy	2004	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress			teachers, staff, resources support DC	expand DC program	2004	No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	In Development				proposed in support of Environmental Sustainability policy	2010	No End Date (Continuous)
Awards/Recognition							
Establish a sustainability/green awards or recognition program	Ongoing/In Progress			awards, recognition to DC teams, anti-idling program participants	continued	2004	No End Date (Continuous)
Staff Professional Development							
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress			staff workshops and teacher Professional Development events	2010: Sustainability Manager and Project Manager to become LEED EB accredited	2002	No End Date (Continuous)
Include green options in employee performance measurement system	Ongoing/In Progress			in place for limited Operations staff	broaden green performance measurement system	2009	No End Date (Continuous)

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Staff awareness/education						
Provide education to staff about the science of climate change	Ongoing/In Progress		teacher and staff workshops	continued	2005	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress		staff and teacher education	continued	2006	No End Date (Continuous)
Provide green tips on staff website or in newsletters	In Development			proposed in support of Environmental Sustainability policy	2010	No End Date (Continuous)
Client/public awareness/education						
Provide education to clients/public about the science of climate change	Ongoing/In Progress		student education, science curriculum, Mayor's Youth Forum	continued	2004	No End Date (Continuous)
Provide education to clients/public about the conservation of water, energy, and raw materials	Ongoing/In Progress		student education, science curriculum	MoE science curriculum	2005	No End Date (Continuous)
Provide green tips on client/public website or in newsletters	In Development			proposed in support of policy	2010	No End Date (Continuous)
Other Education, Awareness, and Engagement Actions						
Hire a Sustainability Manager	Complete		Sustainability Manager hired, fiscal '09 -'10		2009	2010
Develop Environmental Sustainability Policy	In Development			2010: Develop and have Board approve policy; develop supporting regulations	2010	2010
Sustainability link to SD23 website	In Development			2010: Work with SD23 Communications to create link	2010	2010
SD23 Sustainability Conference	In Development			2010: Career Planning Conference, fall	2010	2010
Other Sustainability Actions						
Water conservation						
Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models	Ongoing/In Progress		Water use benchmarking of schools, water meters installed at multiple sites, fixtures and fittings replaced with efficient models, motion sensor faucets at Mount Boucherie Secondary	irrigation system audits and recommissioning, xeriscaping	2009	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	In Development			further benchmarking, water management regulations	2009	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		ongoing paper, cardboard recycling, some bottle return, waste audits, composting pilot program	full recycling, co-mingling pilot site, broaden composting program	2005	No End Date (Continuous)
Implement a hazardous waste reduction and disposal strategy	Complete		annual tender for reduction, use and disposal		2004	No End Date (Continuous)
Procurement (non-paper supplies)						
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	Complete		sustainable purchasing program in place		2008	No End Date (Continuous)

Action	Status (as of 12/31/09)		Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Require a minimum purchase of sustainable, and organic food and beverages supplied by contracted food suppliers or caterers	In Development				review of contracted food suppliers, caterers	2010	No End Date (Continuous)
Building construction, renovation, and leasing							
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Ongoing/In Progress			furniture, equipment and metal recycling	continued	2006	No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	Ongoing/In Progress	25	% of business cases incorporating lifecycle costing since start year indicated	Chute Lake Elementary built to LEED Silver standards, energy efficient HVAC and lighting equipment installed	geoexchange upgrade to HVAC system, solar DHW system, efficient lighting systems, condensing boilers	2006	No End Date (Continuous)
Indoor air quality							
Enforce a scent-free policy (e.g., no strong perfumes, deodorants, etc.)	Complete			Scent free policy in place		2007	2009
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	Ongoing/In Progress			some low VOC products used on project specific basis eg new Chute Lake Elementary school	expand the use of low VOC products in new construction and renovation projects	2005	No End Date (Continuous)
Commuting to and from home							
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress			multiple programs for students	encourage staff to participate in programs	2003	No End Date (Continuous)
Other Sustainability Actions							
Service vehicle operators given the option to take vehicle home	Ongoing/In Progress			Given distances between school sites, starting a service vehicle from home reduces travel	continued	2005	No End Date (Continuous)
SMARTTool deployment	Ongoing/In Progress			Build and test SMARTTool	2010-2012: Use SMARTTool to track emissions for carbon neutral status	2009	No End Date (Continuous)