



# Rocky Mountain School District No. 6 - 2009 Carbon Neutral Action Report

## Executive Summary

The Rocky Mountain School District has made significant progress in reducing greenhouse gas emissions in 2009, with an overall reduction of 5% compared to the 2008 calendar year. This marks a significant turning point, since energy use and greenhouse gas emissions had been increasing year over year for a number of years prior to 2009. In response to the provincial government's carbon neutral mandate for government operations, and to tie together environmental initiatives already underway in the district, in 2008 *Environmental Stewardship* was added as one of the key focus areas to the school district's five year strategy document entitled *District Directions 2008 to 2013*. This executive level focus on environmental stewardship has been the key driver for success in reducing greenhouse gas emissions since it has led to the prioritisation of staffing resources, capital projects, and environmental education towards energy reduction and environmental stewardship.

## Overviews

### Actions Taken by the Rocky Mountain School District to Reduce Greenhouse Gas Emissions in 2009

With the assistance of BC Hydro, an Energy Manager was hired in 2009 to lead planning and implementation of projects to reduce energy consumption and greenhouse gas emissions. Benchmarking of energy performance for buildings, vehicles, and other energy consumption areas was completed to identify key opportunity areas for energy reduction, using a new software platform that ties the school districts capital project management, building condition assessments, and energy and greenhouse gas performance together in one package. Projects to reduce energy consumption and greenhouse gas emissions implemented in 2009 include:

#### Part A – 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*:

- Re-roofing of David Thompson Secondary school with a doubling of roof insulation.
- Re-commissioning of the control systems of schools and other buildings to optimise heating, cooling, ventilation supply, and exhaust operation and schedules.
- Installation of programmable thermostats on heating systems of buildings that don't have central control systems.
- Replacing door and window weather-stripping at schools and other buildings.



- Construction of a 3,000 sq ft net zero energy greenhouse at David Thompson Secondary school in partnership with community volunteers. Solar thermal & PV, rainwater collection, annualized geo-thermal, air heat exchange and high insulation values are some of the features incorporated. The Community Greenhouse is an educational facility that grows food for the schools chef program, with a focus on enhancing local food security, and reducing the carbon footprint of food production & transportation.
- Lighting upgrades in numerous buildings, including changing T12 lamps to T8 lamps, reducing lighting in over lit areas, and adding occupancy sensors.
- Installation of block heater controllers on bus and maintenance vehicle block heater electrical outlets to reduce operation based on temperature and time.
- Energy audits at the three high schools.
- Office and school practices that were modified to reduce paper consumption and mailing transportation energy including:
  - School newsletters changed from paper copies mailed to parents to electronic copies sent out by email.
  - Paperless pay slips sent by email instead of paper copies
  - Paper copies of Board policies and Occupational health and safety manuals replaced with on line versions
  - Paperless board meetings
- Anti Idling practices established for school buses and district vehicles.

### **Part B – 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.

- Reduction in employee travel within the district and outside the district including:
  - Use of Elluminate Live video conferencing for board meetings and meetings with Ministry of Education and other school districts.
  - Organisational restructuring in the operations department to decrease travel between the three distant school zones.
- During 2009 schools continued to promote practices such as recycling, composting, operating greenhouses, and planting trees.

### **Operational Changes in 2009**

No major operational changes that affected Rocky Mountain School District's GHG emission profile, such as changes to owned or leased building area or changes to the number of employees requiring vehicles, occurred during 2009.



## **Plans to Continue Reducing Greenhouse Gas Emissions 2010 – 2012**

Reducing energy consumption and greenhouse gas emissions will continue to be a key focus for the Rocky Mountain School District over the next three years, in alignment with its focus on environmental sustainability contained in *District Directions 2008-2013*. Projects planned for the next three to five years show the potential for the school district to save approximately \$500K per year in energy costs, while significantly reducing greenhouse gas emissions and contributing towards becoming carbon neutral. Some projects planned for the next three years include:

- Retrofitting the HVAC system at Golden Secondary School with a ground source heat pump system
- Control system upgrades throughout the district
- Boiler upgrades at a number of schools and operations buildings
- Lighting upgrades at the three high schools and installation of occupancy controls throughout the district
- Increased roofing insulation and wall insulation with cladding and roof upgrades at a number of buildings
- Re-commissioning of the largest buildings and installation of real time energy consumption software to allow continuous optimisation of energy consuming systems
- Purchase of hybrid and fuel efficient district vehicles to replace less efficient vehicles
- Student and employee behavioural change education projects

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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 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	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	In Development			Completed research into more fuel efficient buses by investigation success in other school districts.	Purchase of more fuel efficient small district vehicles (eg. Hybrid Cars and Trucks) and fuel efficient school buses upon replacement.	2010	No End Date (Continuous)
Perform regular fleet maintenance to improve fuel-efficiency	Complete	100	% of vehicles are subject to regular maintenance for fuel efficiency	Engine tune ups and tire pressure checks regularly completed.		2000	No End Date (Continuous)
<b>Behaviour change program</b>							
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	20	% of current drivers are trained	SmartDriver for School Bus Programs - NRCan	SmartDriver for School Bus Programs - NRCan	2008	No End Date (Continuous)
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Complete			Developed and implemented an anti idling policy for buses and another for district vehicles.		2010	No End Date (Continuous)
Encourage carpooling in fleet vehicles	Complete			Staff is encouraged to car pool		2008	No End Date (Continuous)
<b>Other Mobile Fuel Combustion Actions</b>							
Block heater controls	Complete			Installation of block heater controllers on bus and maintenance vehicle block heater electrical outlets to reduce operation based on temperature and time.		2009	2010
<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	0	% of buildings have a real time metering system installed	Applied and accepted by the BC Hydro Continuous Optimisation Program for the three large schools eligible for their program.	Installing pulse metering and real time metering systems in David Thompson Secondary School, McKim Middle School, and Golden Secondary School, and will complete recommissioning of the three schools.	2009	No End Date (Continuous)
<b>Owned buildings</b>							
Establish energy performance baseline for owned buildings	Complete	100	% of owned buildings have an established energy performance baseline	Purchased and implemented "Fame" software for tracking utility consumption, established a dedicated part time person for entering utility data, hired an energy manager for benchmarking energy performance of all buildings.		2009	No End Date (Continuous)
Incorporate integrated design process into new construction or during renovations of owned buildings	Complete			Hired an energy manager to manage the integrated design process for new construction and renovations.		2009	No End Date (Continuous)

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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
Complete energy retrofits on existing, owned buildings	Ongoing/In Progress	80	% of owned buildings have undergone energy retrofits since start year indicated	Lighting retrofits from T12 to T8's, control system improvements, and weatherstripping in various schools. Increased insulation added to David Thompson High School during roof replacement.	Major lighting redesign projects at three high schools, boiler replacements at two high schools, ground source heat pump system installation at one high school, replacement of all remaining T12 lights with T8 lights, installation of occupancy sensors in schools throughout the district, window and wall insulation and roof insulation upgrades in several buildings, DDC system control upgrades.	2005	No End Date (Continuous)
<b>Retrofitting owned buildings</b>							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	10	% of retrofits (captured above) had heating, cooling, and ventilation systems upgrades	Re-commissioning of control system operations for HVAC systems (see controls)	Retrofitting the HVAC system at Golden Secondary School with a ground source heat pump system, boiler upgrades at a number of schools and operations buildings.	2005	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	80	% of retrofits (captured above) had lighting systems upgrades	Lighting upgrades in numerous buildings, including changing T12 lamps to T8 lamps, reducing lighting in over lit areas, and adding occupancy sensors	Lighting upgrades at the three high schools and installation of occupancy controls throughout the district	2005	No End Date (Continuous)
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	20	% of retrofits (captured above) had control system upgrades or adjustments	Re-commissioning of the control systems of schools and other buildings to optimise heating, cooling, ventilation supply, and exhaust operation and schedules. Installation of programmable thermostats on heating systems of buildings that don't have central control systems	Re-commissioning of the largest buildings and installation of real time energy consumption software to allow continuous optimisation of energy consuming systems, DDC control system upgrades planned throughout the district.	2005	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	20	% of retrofits (captured above) had insulation improvements	Re-roofing of David Thompson Secondary school with a doubling of roof insulation, replacing door and window weather-stripping at schools and other buildings.	Increased roofing insulation and wall insulation with cladding and roof upgrades at a number of buildings	2005	No End Date (Continuous)
<b>Leased buildings</b>							
Establish energy performance baseline for leased buildings	Complete			Purchased and implemented "Fame" software for tracking utility consumption, established a dedicated part time person for entering utility data, hired an energy manager for benchmarking energy performance of all buildings.		2009	No End Date (Continuous)
<b>IT power management</b>							
Install power management software which shuts down computers outside of regular business hours	Complete	90	% of computers shut down automatically outside of regular business hours	Installed Deep Freeze software		2008	No End Date (Continuous)
Implement server virtualization	Complete	10	% of servers have been virtualized since start year indicated	Server virtualization for servers in the Kimberley Zone Office		2009	No End Date (Continuous)
Apply auto-sleep settings on computer monitors and CPUs	Complete	90	% of computers have auto-sleep settings applied	Installed Deep Freeze software		2008	No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Complete	75	% reduction in printers, copiers, and/or fax machines since start year indicated	Multifunction devices installed.		2008	No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress			CRT monitors replaced with flat screen LCD monitors in offices and some classrooms.	Continuation of replacement of computer monitors with LCD monitors.	2007	No End Date (Continuous)
<b>Other Stationary Fuel Combustion and Electricity Actions</b>							

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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
Net zero Energy Greenhouse	Complete			Construction of a 3,000 sq ft net zero energy greenhouse at David Thompson Secondary school in partnership with community volunteers. Solar thermal & PV, rainwater collection, annualized geo-thermal, air heat exchange and high insulation values are some of the features incorporated. The Community Greenhouse is an educational facility that grows food for the schools chef program, with a focus on enhancing local food security, and reducing the carbon footprint of food production & transportation.		2009	No End Date (Continuous)
<b>Supplies (Paper)</b>							
<b>Paper Type</b>							
Purchase 30% post-consumer recycled paper	Complete	100	% of total paper purchased contains 30% recycled content	Switched paper purchases to 30% recycled content		2008	No End Date (Continuous)
Purchase 100% post-consumer recycled paper	In Development			Investigated cost implications of 100% recycled paper.	Planning to switch the majority of paper purchases to 100% recycled.	2009	No End Date (Continuous)
<b>Electronic media in place of paper</b>							
Use electronic document library for filing common documents	Ongoing/In Progress			Some common documents filed electronically	Centralized document storage for all departments	2009	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress			Board policies and occupational health and safety binders moved to web.	Other documents to be evaluated.	2009	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Complete			Electronic pay stub system implemented.		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			Board meetings paperless	Ongoing	2009	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 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	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	5	% of computers have web-conferencing software installed	Elluminate set up and used for web conference meetings with other school districts and the Ministry of Education. Microsoft Live Meeting is also used by some users.	Web conferencing instead of travel continuing to be strongly encouraged.	2008	No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	In Development			Video conferencing system using internet based webcams and telephone conferencing is set up and used in the District Board Office.	video conferencing instead of travel continuing to be strongly encouraged.	2008	No End Date (Continuous)
<b>Behaviour change program</b>							
Train staff in web-conferencing	Ongoing/In Progress	5	% of staff are trained web-conferencing	Some staff trained in web conferencing	Increased training	2008	No End Date (Continuous)
Encourage staff to consider virtual attendance/presentation at events where possible	In Development			Ongoing encouragement.	Encourage staff to use web or video conferencing instead of travelling.	2008	No End Date (Continuous)
Encourage carpooling to meetings	Complete			Carpooling strongly encouraged.		2008	No End Date (Continuous)
<b>Education, Awareness, and Engagement</b>							
<b>Staff Professional Development</b>							
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress			Staff attended courses on energy efficiency.	Courses on energy efficiency and sustainability.	2009	No End Date (Continuous)
<b>Staff awareness/education</b>							
Provide green tips on staff website or in newsletters	In Development				Website under development containing staff tips	2010	No End Date (Continuous)
<b>Client/public awareness/education</b>							
Provide education to clients/public about the conservation of water, energy, and raw materials	In Development			Greenhouse Education program on wise use of water, energy and resources	Develop sustainability website with green tips and teacher resources for environmental education.	2010	No End Date (Continuous)
Provide green tips on client/public website or in newsletters	In Development				Develop sustainability website with green tips and teacher resources for environmental education.	2010	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			Established a long term target of 25% reduction. Several different low flow toilet models installed as pilot in a few schools and board office.	Low flow toilets planned to be installed in all schools.	2009	2011
<b>Waste reduction/diversion</b>							

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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
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	In Development		Established a long term target of 25% reduction in waste from all schools.	Encourage schools to divert waste to recycling to reduce pick up of solid waste bins.	2009	No End Date (Continuous)
<b>Procurement (non-paper supplies)</b>						
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	Complete		All custodian cleaning supplies changed to green cleaning supplies and microfibre cloths.		2009	No End Date (Continuous)
<b>Building construction, renovation, and leasing</b>						
Incorporate lifecycle costing into new construction or renovations	Complete		Life cycle costing incorporated into all major renovation projects		2009	No End Date (Continuous)