

# Carbon Neutral Action Report 2011

Surrey School District



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# Executive Summary

In 2011, the Surrey Board of Education continued to strategically implement a coherent, aligned and sustainable plan for the achievement of ongoing energy efficiencies.

The Board adopted an Energy Management Conservation Policy with measurable energy reduction targets. Stable, long-term funding was established to ensure the success of technical and behavioural projects for the next four years. As a result, Surrey Schools is on track to surpass the energy savings target of 10 million kilowatt (kWh) hours by 2015.

Recent energy savings projects include preparation for the installation of power management software on more than 13,000 computers.

An energy management information system was installed at 29 schools and the District Education Centre, where 27 departments from seven different sites were consolidated throughout the spring and summer of 2011, culminating in an official opening Sept. 21. This laid the foundation for greater operational efficiencies and student and staff engagement.

Through education, facility upgrades and effective maintenance and operations programs, the Surrey School District has reduced building energy intensity (kWh/m<sup>2</sup>) in each of the past five years. Based on current in-place projects, the district is expecting electrical energy savings of more than \$2 million over the next three years.

Surrey Schools is a BC Hydro Power Smart Partner with incentive funding agreements valued at more than \$1 million.



*Wayne Noye  
Secretary-Treasurer*



# Executive Summary

*“... Surrey Schools is on track to surpass the energy savings target of 10 million kilowatt (kWh) hours by 2015.”*

The Board of Education of Surrey Schools has purposefully undertaken a journey toward sustainable energy conservation. In recognition of the district's progress and achievement, the City of Surrey awarded the district with the Clean Energy City Award for innovation in energy conservation and efficiency.

In addition, BC Hydro has nominated Surrey Schools for a Power Smart Excellence Award in the category of “New” Leader. The Power Smart New Leader designation provides the highest level of recognition to organizations that are demonstrating a “best-in-class” approach to strategic energy management planning and ongoing commitment to energy conservation.

Sincerely,

Wayne Noye  
Secretary-Treasurer  
Surrey Schools



# Greenhouse Gas Emissions

The total greenhouse gas emissions from all sources covered by the Greenhouse Gas Reduction Targets Act (as reported by SMARTTool) are 21,244 tonnes of CO<sub>2</sub>e.



It was estimated that fugitive emissions from stationary cooling comprise about 0.01 per cent of Surrey Schools' total emissions, and the ongoing effort to collect or estimate emissions from this source annually is disproportionately onerous. Thus, these emissions meet both the requirement to be below one per cent of the district's total emissions and the requirement to be onerous to collect. For this reason, emissions from this source have been deemed out-of-scope and are not included in the Surrey School District's total greenhouse gas emissions profile or offset purchase.



# Offsets Applied to Become Carbon Neutral

In order to become carbon neutral for 2011, the Surrey Board of Education purchased carbon offsets for 21,008 tonnes of CO<sub>2</sub>e from the Pacific Carbon Trust at a total cost of \$525,952.25 (excluding HST).

39.73 tonnes CO<sub>2</sub>e of carbon dioxide emissions from the combustion of biomass and biomass-based fuels were reported as part of our greenhouse gas emissions profile in 2011. However, as stated in Methodology for Reporting B.C. Public Sector Greenhouse Gas Emissions Version 2.0, the carbon dioxide emissions resulting from the combustion of biogenic fuel sources must be reported but do not require offsets.

As required by Section 5 of the Carbon Neutral Government Regulation, 193.38 tonnes of CO<sub>2</sub>e of emissions resulting from the operation of school buses were reported as part of our greenhouse gas emissions profile in 2011. However, they were not offset as they are out-of-scope under section 4(2) (c) of the Carbon Neutral Government Regulation.



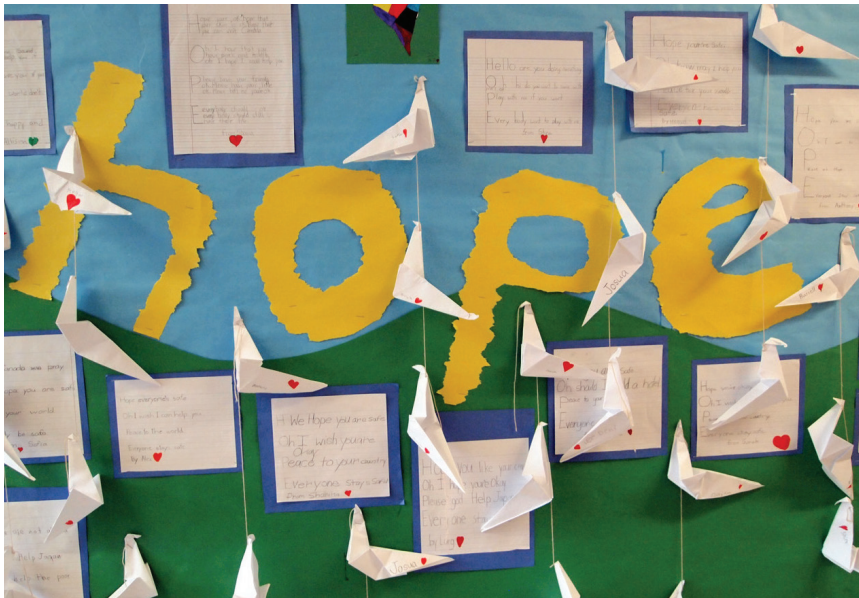




# Changes to Emissions and Offsets Reporting

In 2010, to meet reporting deadlines, the Surrey School District needed to estimate GHG emissions for the last month of the 2010 calendar year. Following the public release of the Surrey School District's 2010 Carbon Neutral Action Report, it was determined that the total emissions for the 2010 calendar year were over-reported by 19 tonnes CO<sub>2</sub>e and offsets required to become carbon neutral in 2010 were over reported by 207 tonnes CO<sub>2</sub>e.

The surplus of offsets purchased in 2010 has been applied against our 2011 emissions.





# Emissions Reduction Activities

## Actions Taken to Reduce Greenhouse Gas Emissions in 2011

A new 11,650 square metre District Education Centre (DEC) was completed with full occupancy by nearly 500 administrative and support staff, teachers and students. Built to LEED Gold standards, this innovatively designed and constructed community-accessible building significantly reduces the district's carbon footprint.



*The LEED-Gold-designed District Education Centre.*

In July 2011, Surrey Schools initiated a study of computer energy usage. Specifically, data was collected on the current infrastructure environment which included servers, desktops, laptops, tablets and related peripheral equipment including monitors, scanners, printers and multi-function devices.

The energy study was completed in the fall and concluded that the district could achieve significant energy savings from the installation of power management software. As a result, the district decided to begin installation of power management software on more than 13,000 computers.

The 28 largest district buildings, including all 19 secondary schools and the District Education Centre, were enrolled in the BC Hydro Continuous Optimization Program Multi-Building Framework. This agreement enables the district to plan and implement improvements to the operating efficiency of the largest energy consuming buildings over a multi-year time frame. As part of the program, building utility revenue meters have been upgraded, providing access to an Energy Management Information System that analyzes and reports on building energy data. Phase 1 of the multi-building strategic plan began in May 2011 with nine secondary schools and the District Education Centre in the investigation phase.

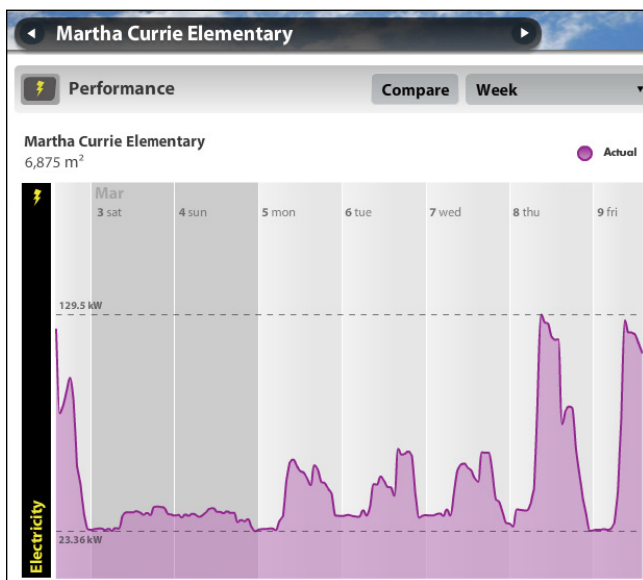




# Emissions Reduction Activities

This phase involves the identification of cost effective retro-commissioning measures at each of 10 sites.

A significant goal of the Continuous Optimization Program is to increase the engagement and awareness of students and staff through coaching and web-based access to a dashboard that displays building energy performance. All 28 sites and two additional elementary schools have access through the dashboard to real-time information about building energy consumption. An energy awareness pilot involving four secondary schools was initiated as a means of introducing students and staff to the functionality of the dashboard and the Energy Management Information System. This project aims to increase student engagement on energy issues through hands-on workshops, knowledge surveys and inter-school competitions in which schools compete to see which school can reduce their energy consumption and greenhouse gas emissions the most, tracking their progress on the online dashboard.



*Online dashboard shows building energy consumption in real time.*

Surrey Schools is participating in BC Hydro's New Construction Program. Energy-efficient lighting design agreements to maximize efficiency and exceed current lighting power density standards have been completed for three elementary schools.



# Emissions Reduction Activities

## Plans to Continue Reducing Greenhouse Gas Emissions 2012-2014

*“The district will continue to develop, support, motivate and promote school sustainability initiatives through robust school, district and partner-led programs, workshops, conferences and environmental showcases.”*

- The district will implement the energy conservation measures identified at the 10 sites involved in phase 1 of the Continuous Optimization Multi-Building Process and initiate the investigation phase for the nine phase 2 sites. Phase 3 sites will begin the investigation phase in July 2013. Training and coaching of operations staff will begin in 2012 and continue through 2016.
- The district will install Power Management Software on more than 13,000 computers and will provide real-time data on computer energy usage.
- The district will expand the New Construction Program to include efficient energy design agreements for planned construction of two secondary school classroom additions and two new elementary schools. Energy efficient lighting designs will be implemented at the three elementary schools identified in 2011.
- The district will install a new ventilation air-heating system, complete with a perforated all-metal exterior wall-mounted panel that uses solar energy as a means to heat outside air, at four secondary schools.



# Emissions Reduction Activities

- The district will implement a Workplace Conservation Awareness Program at all schools and sites over a multi-year timeline. A comprehensive plan was developed in 2011 and temporarily postponed. Prior to postponement, 15 schools were represented and participated in the planning.
- The district will evaluate options to reduce energy consumption and greenhouse gas emissions from existing thermal energy systems used for heating and cooling district buildings.
- The district will continue to develop, support, motivate and promote school sustainability initiatives through robust school, district and partner-led programs, workshops, conferences, and environmental showcases.
- The district will establish an interactive energy conservation presence on the district's Unified Communications website.