

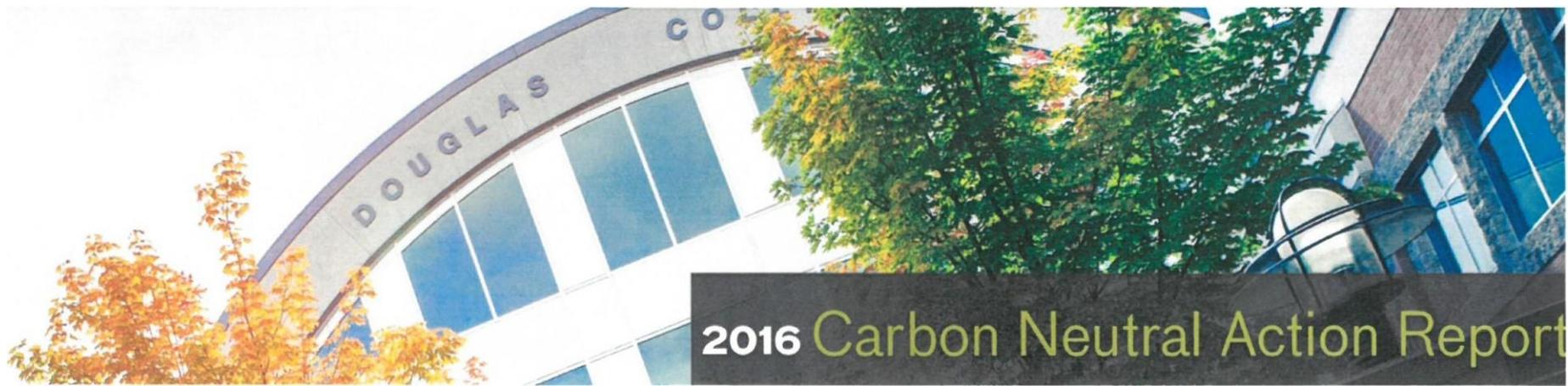
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2016 Carbon Neutral
Action Report





2016 Carbon Neutral Action Report

Executive Summary

Douglas College continues to be concerned about the quality of the natural environment and building a sustainable society. As a significant public sector organization, the College has a responsibility to enable our community to become knowledgeable about the environment, and to become environmentally responsible. To educate by example, Douglas College demonstrates positive environmental citizenship by taking all reasonable efforts to make environmentally sound decisions.

Douglas College continues to investigate opportunities provided by organizations such as BC Hydro's Power Smart programs and initiatives, Public Sector Energy Conservation Agreement (PSECA), Energy Canada (Enercan), and the Ministry of Advanced Education. These relationships provide access to a variety of resources to assist us in the development of a college-wide environmental sustainable energy management plan that focuses on achievable, sustainable and measurable results.

Douglas College is committed to demonstrating quality environmental stewardship, and internal and external resources are being developed. Through consultation with experts and community partners, we will monitor our progress against our plan, and update our procedures based on experience gained.

Executive Approval

Tracey Szirth, VP Administrative Services and CFO

June 14, 2017
Date





2016 Carbon Neutral Action Report

Declaration statement:

This Carbon Neutral Action Report for the period January 1st, 2016 to December 31st, 2016 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2016 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2017 and beyond.

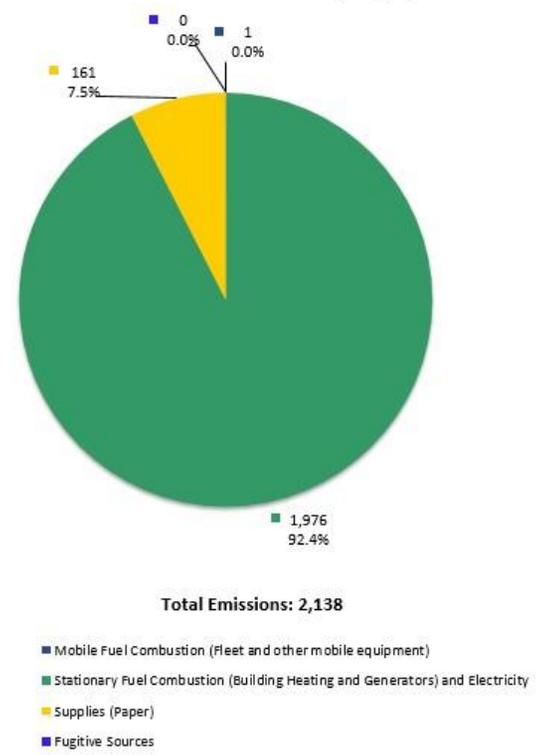
2016 Greenhouse Gas Emissions

In 2016, the total greenhouse gas emissions from all sources covered by the Greenhouse Gas Reduction Targets Act was 2,138 tCO₂e.

Offsets Applied to become Carbon Neutral in 2016

Douglas College recognizes that we are responsible for 100% of the carbon emissions generated by the College. Achieving carbon neutrality involved measuring GHG emissions, reducing emissions where possible, and offsetting the remainder through the purchase of carbon offsets. To become carbon neutral Douglas College purchased offsets equivalent to 2,138 tonnes of CO₂ through the Climate Action Secretariat.

Douglas College
Greenhouse Gas Emissions by Source
for the 2016 Calendar Year (tCO₂e*)



Offsets Applied to Become Carbon Neutral in 2016 (Generated May 23, 2017 3:04 PM)
Total offsets required: 2,138. Total offset investment: \$53,450. Emissions which do not require offsets: 0 **

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.



Emission Reduction Activities in 2016

Key initiatives taken between January 1, 2016 and December 31, 2016 to reduce greenhouse gas emissions include:

New Westminster campus:

- Upgraded fifteen pneumatic VAV boxes to electronic.
- Thirty-two electronic VAV boxes are now interlocked with occupancy sensor and light system. Also, now they are placed in “Night (Unoccupied) mode” where the space temperature set point range is wider resulting in less demand for heating or cooling.
- Replaced five standard duty motor with high efficiency motors (1 x 3HP; 3 x 5HP, 1 x 7.5 HP).
- As part of a 3000 sq. m. renovation and renewal project, the following energy reduction measures were included in the design:
 - LED lighting, programmable low voltage lighting controls, astronomical time clock, daylight sensing and occupancy sensors.
 - Occupancy sensors connect to HVAC terminal boxes, fan wall AHU system with variable speed drives and carbon dioxide sensors to adjust ventilation rates to match occupancy requirements.
 - Double pane, low-e, argon filled windows, upgrade fiberglass insulation with spray foam insulation/vapour barrier.
 - Two lecture theaters were renovated into offices and classrooms. The two Air Handler Units previously serving the theatres were de-commissioned and the space is now served by 4 electronic VAV boxes resulting in less energy consumption.
- Brought car sharing option to the campus for employees and students.
- Hosted Beyond the Headlines in the Climate Conversation: Energy Solutions and Innovation event. Sponsored by FortisBC, this all-day event brought together students, employees, alumni and the community to focus on the pressing issues of climate change and energy.



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Coquitlam campus:

- Programmed DDC control algorithms to control variable speed pumps on the secondary heating loops. The pump speed adjusts to meet secondary loop static pressure reducing electrical consumption.
- Removed twenty outside step light fixtures and replaced with 4 LED pole tops.
- Added occupancy sensors in 3 photocopier rooms so the lights turn off if not in use.
- Built a Sustainable Outreach and Learning Garden to be used to engage community volunteers in learning about the ecology of urban gardens, with a particular focus on beneficial garden insects. The project looks at attracting predatory and parasitic insects into urban gardens as well as studying pollinators and their habitat through identifying, counting bees and monitoring bee houses.

Both campuses:

- Converted to electronic time sheets for staff, resulting in paper savings of at least 38,700 sheets per year.
- Replaced all exit signs with LED fixtures.
- Implemented four-stream recycling across the campuses. Promoted recycling across the College community using various channels such as the intranet, Douglas College website and social media, as well as have recycling volunteers at major events. Conducted a recycling audit six months after implementation to identify success rate and areas of improvement.
- Exterior lights are now adjusted with tight LUX (brightness unit) set point – security monitored the adjustment to ensure safeness.

Plans to Continue Reducing Greenhouse Gas Emissions 2017 – 2018

- Upgrade the Chiller Plant room at the Coquitlam campus.
- Replace windows at New Westminster campus to Double pane, low-e, argon filled windows.
- Conduct an evaluation of providing electronic charging stations at both campuses.
- Further expand car sharing options for employees and students.
- Host a Recycling Forum involving post-secondary, municipal and private companies to share best practices.
- Develop a new procurement policy to include that the College will give preference to environmentally friendly products.
- Where necessary, convert control of building exhaust fans from interlocked control to scheduled control based on occupancy. Where required, add DDC monitoring to exhaust fans to allow for improved return fan air flow tracking
- Continue to convert pneumatic VAV controls to DDC.
- At Coquitlam campus convert surface parking lot pole lights from 250 watt HPS to LED, sidewalk pole lights from 100 watt HID to LED, and 630 pot lights to LED.
- Upgrade Carnarvon parkade stairwell lighting (pot & exit lights).
- For the New Westminster underground parking lot, add Carbon-Monoxide sensors to control exhaust fans. They presently run continuously based on occupancy
- Implement some of the ECM's identified in the ASHRAE level 2 audit (i.e., lighting upgrades, occupancy sensors, etc.)
- For the Coquitlam parking lot, add occupancy sensors to parking lot to turn off non-emergency lights when the lot has low occupancy
- Add occupancy sensors to classrooms



2016 Carbon Neutral Action Report

Douglas College is committed to researching and initiating where feasible, short and long term initiatives to promote environmental sustainability while meeting provincially mandated legislation for the reduction of Greenhouse Gas Emissions.

The College will continue to pursue sustainability initiatives and has launched an ongoing awareness campaign to encourage our employees to think creatively and to act on reducing consumption in the workplace and take on the challenge of modeling new personal behaviour around sustainability.

2016 Carbon Neutral Action Report Survey

Part One (external)

Contact Name(s):

Chris Gardner

Organization Name:

Douglas College

Please select your sector:

- Post-Secondary Institution

1) Stationary Sources (Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

During 2016, did your organization take any of the following actions to support emissions reductions from buildings?

Select all that apply

- Performed energy retrofits of the organization's buildings.: If yes, how many buildings? 3
- Other actions? Please describe briefly.: Implemented four-stream recycling across the campuses. Brought car sharing program to the New Westminster campus for students and staff.

Briefly describe your organization's plans to continue reducing emissions from its stationary sources in future years.

Continued focus on infrastructure replacements that include emission reduction. Upgrade of the Chiller Plant at the Coquitlam Campus. Replacement of windows to double pane, low-e argon filled windows at the New Westminster campus. Plans to evaluate the installation of electric vehicle charging stations at both campuses. Development of a new procurement policy to include the preference of environmentally friendly products.

During 2016, did your organization participate in utility-sponsored energy demand management program(s) (e.g. BC Hydro's Energy Management (Manager))?

No

If yes, please describe briefly:

(No response)

2) Mobile Sources (Vehicles, Off-road/Portable Equipment): Fuel Combustion.

During 2016, did your organization take any of the following actions to support emission reductions from its mobile sources?

Select all that apply

- Other actions? Please describe briefly.: Skytrain is now connected to our Coquitlam Campus which has improved transit accessibility.
-

Briefly describe your organization's plans to continue reducing emissions from its mobile sources in future years.

Further expansion of car sharing options for employees and students. Installation of electric car charging stations at both campuses.

3) Supplies (Paper):

During 2016, did your organization take any of the following actions to support emissions reductions from paper supplies?

Select all that apply

-
- Other actions? Please describe briefly.: Conversion to electronic time sheets for staff to reduce paper use.
-

Briefly describe your organization's plans to continue reducing emissions associated with its office paper use in future years.

(No response)

4) Other Sustainability Actions:

Business Travel:

During 2016, did your organization take any of the following actions to support emissions reductions from business travel?

Select all that apply

- Encouraged alternative travel for business (e.g. bicycles, public transit, walking)
-

Education Awareness:

During 2016, did your organization have any of the following programs or initiatives to support sustainability education and awareness?

Select all that apply

- Other, please describe briefly: As part of the implementation of a 4 stream recycling program created a Recycling Team.
-

Other Sustainability Actions:

During 2016, did your organization have any of the following programs or initiatives to support sustainability?

Select all that apply

- An operations policy or program to facilitate the reduction and diversion of building occupant waste (e.g., composting, collection of plastics, batteries) from landfills or incineration facilities
-