



University of Victoria | 2013 Carbon Neutral Action Report



University
of Victoria



Sustainability in action.



Executive Summary

In 2013 the University of Victoria continued its work to reduce its greenhouse gas emissions through a variety of programs and initiatives. This work included building retrofit projects with funding and support from the BC Hydro Continuous Optimization Program. The annual greenhouse gas reductions from phase 1 of this program were more than 770 tCO₂e in 2013, and the remaining two phases of the program will be implemented in 2014/15. UVic has also funded energy efficiency, emission reductions and water savings initiatives through the Revolving Sustainability Fund, which provides funding to projects with relatively short payback periods. Finally, UVic continued to work with its campus community to conserve energy and reduce emissions through behaviour change programs in offices, labs and student residences. All of these activities contribute to the reductions referenced in this report.

UVic's efforts to reduce its greenhouse gas emissions helped, in part, to its achievement of a Gold rating in the Sustainability, Tracking, Assessment & Rating System (STARS), administered by the Association for the Advancement of Sustainability in Higher Education (AASHE). UVic was the fifth Canadian university to achieve a Gold rating under the STARS program. Only 56, or approximately 18 per cent, of the 300 post-secondary institutions in Canada and the United States who have participated in STARS have received a Gold rating. This illustrates the progress UVic has made in advancing sustainability and greenhouse gas emission reductions over the last few years.

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2013 Greenhouse Gas Emissions

The total GHG emissions for the University of Victoria are 12,764 tCO₂e for the 2013 calendar year. Emission categories are outlined in Table 1 below.

REPORTING CATEGORY	2012 tCO ₂ e	2013 tCO ₂ e	PERCENT CHANGE
University Owned Buildings and Leased Spaces: Natural Gas	11,978.3	11,237.5	-6.2%
University Owned Buildings and Leased Spaces: Electricity ¹	1746.8	1006.3	-42.4%
Mobile Combustion/Fleet	306.5	334.6	9.2%
Paper Supplies ²	135.5	185.6	36.9%
Total	14,167.1	12,763.9	-9.9%

Table 1. Greenhouse gas emissions for the University of Victoria.

The primary source of greenhouse gas emissions for UVic is from the energy systems in buildings on campus, which is powered primarily by natural gas. Natural gas accounts for over 88% of the total emissions, while electricity accounts for 8%. Emissions associated with fleet vehicles and paper purchases make up the remainder.

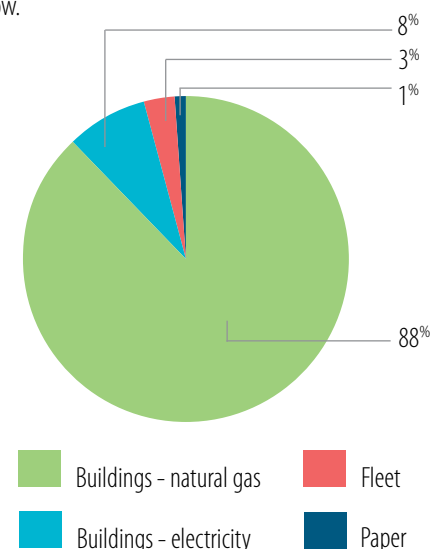


Figure 1: 2013 Greenhouse Gas Emission Breakdown University of Victoria

Offsets Applied to Become Carbon Neutral in 2013

The total greenhouse gas emissions for the University of Victoria in the year 2013 is 12,764 tCO₂e which includes all properties owned by the university on and off campus, and properties leased from other entities for university business.

This total excludes fugitive emissions as it was estimated that stationary fugitive emissions from cooling do not comprise more than 1% of the University of Victoria's total emissions and an ongoing effort to collect or estimate emissions from this source would be disproportionately onerous. For this reason, emissions from this source have been deemed out-of-scope and have not been included in the University of Victoria's total greenhouse gas emissions profile.

As required by section 5 of the Carbon Neutral Government Regulation, 12 tCO₂e emissions resulting from the use of bio-fuels were reported as part of our greenhouse gas emissions profile in 2013. However, they were not offset as they are out-of-scope under section 4(2) (c) of the Carbon Neutral Government Regulation. Including the 80 credits owing from the PCT at the end of 2012, the total UVic emissions for offset for the 2013 calendar year are 12,672.

¹ As a result of a high water year, the emission factor for hydro electricity purchased in 2013 from BC Hydro was down from the 2012. Hydro electricity use in 2013 resulted in 4 kgCO₂e/GJ, whereas it resulted in 6.9 kgCO₂e/GJ in 2012.

² It is important to note that total copy paper purchases, which are reported in the GHG inventory, have decreased 29% between 2011 and 2013. A change in the reporting criteria between 2012 and 2013 resulted in the emissions increase from paper supplies. In 2013 an independent review of the data used for GHG emissions measurement determined that UVic's practice of subtracting paper that had been sold to students (i.e. either through photocopying or course-packs) from its emissions inventory data was an incorrect interpretation of the regulations. The Climate Action Secretariat provided guidance that paper, which is purchased by UVic and sold to students, should remain within the reporting scope. The firm that conducted the review, Deloitte LLP, confirmed that "while immaterial to UVic's total emissions, the current process results in an understatement." Therefore, emissions from paper supplies in previous years were not recalculated and the change in scope was implemented for the 2013 GHG inventory.

Emission Reduction Activities

UVic's commitment to sustainability and greenhouse gas reductions is part of a comprehensive institutional effort guided by the Sustainability Action Plan: Campus Operations 2009 – 2014. The University strives to integrate sustainability into teaching, research, campus operations and community partnerships. This approach allows us to find synergies across disciplines and departments to assist in advancing campus sustainability and reductions in greenhouse gas emissions from university operations.

Actions Taken to Reduce Greenhouse Gas Emissions in 2013

- The implementation of 60-plus projects through phase 1 of the BC Hydro Continuous Optimization Program was completed in 2013 in six of the largest buildings on campus, including the Bob Wright Centre. The projects included, but were not limited to, the installation of energy efficient lights, HVAC control changes, and the installation of photo sensor lighting controls. The verified energy savings of these projects were 1,600,000 kWh of electricity and 4,600,000 ekWh of natural gas, which translates into approximately 770 tCO₂e.
- With financial assistance from BC Hydro, UVic conducted a detailed energy study for phase 2 of the Continuous Optimization Program. This report recommended more than 70 projects, six additional campus buildings, including the MacKinnon and the Petch buildings. Recommendations included the installation of variable speed fan drives in HVAC systems, lower wattage lamps and the installation of Douglas lighting control panels that allow lights to be efficiently regulated. Project opportunities will be selected for implementation by UVic in 2014.
- With the financial assistance of Fortis BC, UVic conducted energy studies of several buildings not heated by the district heating system. The report, delivered to UVic in late 2013, indicated significant energy and GHG savings could be achieved by replacing boilers with high efficiency models in buildings such as Fine Arts and the Phoenix Theatre. Those recommendations are currently under review and funding sources are being explored.
- The Sustainability Action Team program, with funding from BC Hydro Power Smart's Workplace Conservation Awareness program, continued with behaviour change programs involving staff, students and faculty in 5 additional campus buildings (10 buildings participated in between 2011 and 2012). Office building occupants in the Sedgewick building were provided with basic information on how to conserve energy and reduce waste in the workplace, and teams competed by committing specific sustainable behaviours, such as turning out the lights and riding to campus by bike, over a one month period. Students living in Gordon Head, Cluster East Block and the 294 Bed residence buildings were provided with training on demand, and residence staff were given a program that they used to educate students about plug load and phantom power. Lab users in the Bob Wright Centre were engaged in initial conversations about the use of fume hoods. The information collected in 2013 was used to augment the made-in-UVic Green Lab program planned for implementation in early 2014.
- The Revolving Sustainability Fund, which provides financing for electricity, natural gas and water use reduction projects that demonstrate cost savings to the university, continued to provide funding for projects that would not have otherwise been completed under normal budget scenarios. Two energy saving projects were implemented in 2013. New lighting standards were installed on campus adjacent to the Campus Services Building. This retrofit provided long lamp life, maintenance savings and better colour quality. This project was estimated to save 10,000 kWhs of electricity. Secondly, staff at the Enterprise Data Centre upgraded the firmware that operates the UPS (Uninterruptable Power Supply) system, which is necessary to maintain a data centre. This increased the efficiency of the UPS from 80% to approximately 99% and resulted in the savings of an estimated 500,000 kWhs. These two projects prevented more than 7 tCO₂e of greenhouse gases from being emitted and is estimated to save the university approximately \$40,000 in annual utility costs.
- Due to the age of the campus central boiler plant, the university's Department of Facilities Management began reviewing several options for its replacement. These options included a new high efficiency natural gas plant, fuel-switching to a biomass plant and other alternative energy options. This review was ongoing as of the end of 2013.



Plans to Continue Reducing Greenhouse Gas Emissions 2014-2015

The University of Victoria has a strong history in sustainability and is committed to achieving progress on our electricity and GHG emissions reduction goals. The university employs a range of methods to reach these goals, which extend from sustainable purchasing policies to the Continuous Optimization Program for energy use.

Priorities for the university in 2014-2015 will be greenhouse gas reductions through:

- Utilizing the Revolving Sustainability Fund to provide capital for innovative energy reduction projects. This may include re-commissioning work in the Student Union Building and the implementation of several boiler plant upgrades which are outside of the main campus district heating system.
- Engaging faculty, staff and students with behaviour change initiatives and programs, such as our Sustainability Action Team program.
- Completing phase 2 and initiating phase 3 of the BC Hydro Continuous Optimization Program. These two phases are targeted to match the electrical and natural gas savings associated with phase 1 of the program.
- Proceeding through the year-long coaching stage associated with phase 1 of the Continuous Optimization Program. This stage utilizes continued assistance of engineering consultants to train internal Facilities Management Department employees to continue to monitor and optimize the consumption patterns of the six buildings that were included in phase 1. This will reinforce the reduced energy use in those buildings over their lifespan.
- Submitting applications to the new Carbon Neutral Capital Program, administered by the Ministry of Advanced Education for further greenhouse gas reducing projects, including submissions for heating plant upgrades and renewable energy projects.
- Undertaking continued assessments of high efficiency and alternative energy options for the replacement of the campus central boiler plant.

For additional information on sustainability at the University of Victoria, please see our website at www.uvic.ca/sustainability

uvic.ca/sustainability

