Sustainability Innovation and Recognition

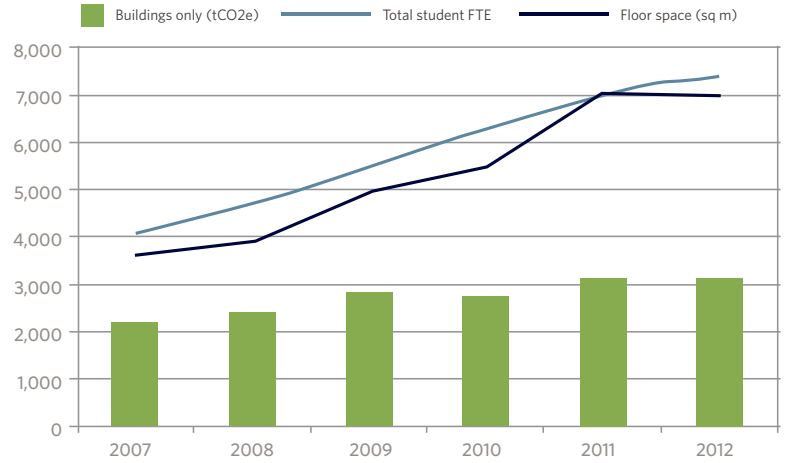
A YEAR IN REVIEW

Sustainable Development

Last year marked the first full year of campus operation since the completion of the build-out. Despite full occupancy of the Engineering, Management and Education Building and the Reichwald Health Sciences Centre in 2012, the campus achieved an absolute reduction in building greenhouse gas emissions, reporting 3,135 tonnes of carbon dioxide equivalent (tCO2e) in 2011 and 3,124 tCO2e in 2012, respectively.

Between 2007 and 2012, absolute building carbon emissions have remained fairly steady, despite an increase in building space of 95 per cent and student full-time enrolment increase of 81 per cent (illustrated below). This significant achievement can be attributed to a focus on green building design, the closed-loop geo-exchange district energy system, and ongoing operational commissioning.

STUDENT FULL-TIME EQUIVALENT (FTE) AND GREENHOUSE GAS EMISSIONS (TCO2E)



The closed-loop geo-exchange district energy system achieved full operation in 2012, with the integration of original academic buildings into the closed loop and the capture of recoverable waste heat from a large data centre. Comprising more than three miles of pipeline, the system provides renewable earth energy to one million square feet of mixed academic buildings through the transfer of heating or cooling energy from an aquifer water loop into campus distribution piping on a separate closed loop. The system is a significant engineering achievement toward increased utilization of renewable energy and carbon emission reduction on the campus and serves as an exceptional demonstration and educational opportunity that highlights the university's sustainability achievements.

Sustainability Reporting

Under the Greenhouse Gas Reductions Target Act, UBC is also required to submit a Carbon Neutral Action Report (CNAR) to the province each year on emissions and actions taken to reduce emissions. As required by provincial legislation, UBC has purchased offsets for its GHG emissions each year since 2010. UBC's Okanagan Sustainability Office works in collaboration with Facilities Management, IT Services, and Supply Management to track progress and develop department-level actions to reduce carbon emissions to 2015. Annual GHG Inventories, Carbon Neutral Action Reports, and SHIFT Sustainability Reports are available at www.ubc.ca/okanagan/sustainability/reports.

Awards and Recognition

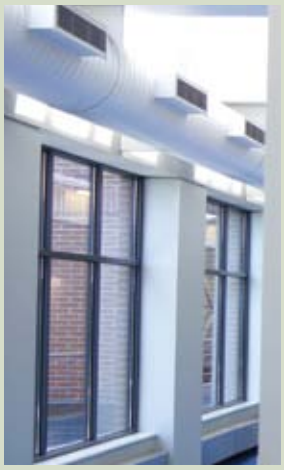
In 2012, UBC's Okanagan campus received more than $200,000 in rebates from the FortisBC PowerSense program for leadership in energy-efficient design of new construction and energy conservation measures in original facilities that will save the campus $150,000 in annual utility costs. Both academic and residential projects combine innovative and sustainable development technologies with a focus on energy conservation, water conservation, and sustainable construction practices. Awarded projects include the Arts and Sciences Centre, the Engineering, Management and Education Building, the Reichwald Health Sciences Centre, the Geo-Exchange District Energy System, and the Gym Lighting Retrofit Project.

Additional awards and acknowledgements received in 2012 include:

- Thompson Okanagan Commercial Building Awards for Purcell Student Residences and the campus Geo-Exchange District Energy System.
- The first campus in the world to achieve Five Green Globes distinction for the Arts and Sciences Centre and the Charles E. Fipke Centre for Innovative Research Facilities.
- Featured profile in the Southern Interior Construction Association (SICA) Construction Review, the official publication of SICA.

Award-winning Purcell Residence

Optimizing Space Use and Energy Conservation: Gym Lighting Replacement Project



The UBC Okanagan Recreation Facility provides a venue for many provincial, national, and international events. With some 1,560 square metres of gym floor space and 860 theatre-style bleacher seats for spectators, the building can accommodate a range of activities that include priority sporting events, convocation ceremonies, and final exams. The original gym lighting system is comprised of indirect 400-watt metal halides lamps designed to minimize glare for athletes during tournaments and events. While providing one of the finest sports facilities in the province, an opportunity existed to consider ways to conserve energy consumption outside of its primary sports use, while enhancing lighting and sound conditions for other uses including exam writing.

The Okanagan Sustainability Office worked with Facilities Management and FortisBC to determine the energy savings potential and return on investment to install a supplementary energy efficient lighting option in the gymnasium. The improvements involve the addition of 77 new high-efficient T5 fixtures which were mounted underneath the existing indirect lighting system. The retrofit provides brighter lights, reduces noise, and reduces power consumption when the facility is not being used for athletic events. The original metal halide lights are only turned on during sports tournaments when indirect lighting is needed.

FortisBC awarded UBC a $19,000 rebate, and the new system will save the campus more than 234,000 kilowatt hours (kWh) and some $12,000 in electricity costs each year. Facilities Management has subsequently completed additional lighting retrofits across the campus in 2012, which will save the university 196,000 kWh annually.

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Campus as a Living Lab

The Campus as a Living Lab initiative seeks opportunities for synergies between operations, research and teaching, and demonstration in sustainability and beyond. Joining the UBC system-wide Campus as a Living Lab Working Committee, the Okanagan campus has established an ad hoc committee charged with identifying an appropriate longer-term administrative structure, and initiating pilot projects that demonstrate the feasibility of UBC's Okanagan campus participation in the Campus as a Living Lab initiative.

Several pilot projects are underway in early 2013, enabling the ad hoc committee to develop an operating process while participating faculty, staff, and community members develop an understanding of what Campus as a Living lab can mean in the Okanagan context (refer to full story on page 12).

Student Involvement: Annual Waste Audit

Students at UBC are familiar with exams, but this one was very different. In early October 2012, a team of 45 student volunteers sorted through two days' worth of trash from every major building on campus as part of the 2012 waste audit.

Students from the Environment and Sustainability Society, Engineers without Borders, Kula Club, Clean Up Campus Club, Peace Seekers Club, UNICEF, and WAVES Corps. were key contributors to the audit, working with Al King, manager of maintenance and grounds, representatives of GreenStep, in partnership with the Okanagan Sustainability Office.

The waste audit assesses the amount and types of items being put in the garbage that could otherwise be recycled, refunded, or composted. The audit found an overall reduction in trash volume from previous years. That reduction included a drop in the number of disposable cups (three per cent less) and volume of paper (four per cent less) since the 2010 audit. Results also showed that plastics in recycling continues to increase—up 10 per cent since 2010—and so has the volume of compostable material due to the increase in biodegradable food containers and paper towels being composted.

About 0.72 litres of waste per person is thrown away each day (based on 9,000 people on campus daily), compared to approximately one litre per person in 2010. However, there is an opportunity for greater education as some material found in the audited garbage was recyclable, compostable, or refundable.

The 2012 campus waste audit coincided with Okanagan College's waste audit, showing a collective commitment to sustainability, student involvement, education, and organized efforts to divert waste from the landfill and reduce the environmental footprint of post-secondary institutions in the Okanagan.