shift

SUSTAINABILITY INITIATIVES
AT UBC'S OKANAGAN CAMPUS

2013

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THE UNIVERSITY OF BRITISH COLUMBIA

SHIFTING PERSPECTIVES

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WELCOME to the fourth edition of SHIFT, UBC Okanagan's annual sustainability publication. We are pleased to share examples of the work we have undertaken in the last year to advance sustainable development on campus and in the communities we serve.

This year's edition of SHIFT features stories that highlight UBC's commitment to sustainability—a commitment realized through the collective leadership of faculty and staff across the institution. Whether highlighting our performance in campus sustainability or our efforts to collaboratively enable project-based integration of research and operations, we continue to strive to influence key social, environmental, and economic sustainability imperatives.

SHIFT helps us to recognize and celebrate the work of others and instils a culture of leadership by example. We thank the contributors to this year's SHIFT for your tremendous leadership, and aspire to further strengthen our performance and resiliency as we progress together.

SUSTAINABILITY
is a
movement
—a shift—
toward
a more
resilient
future.

Can you hear me now?

TECHNOLOGY KEEPS LINES OF COMMUNICATION OPEN BETWEEN CAMPUSES AND AROUND THE GLOBE

It used to be a 55-minute flight or a five-hour drive between Kelowna and Vancouver campuses when UBC faculty and staff needed face time to discuss issues and projects. Time consuming, expensive, and a definite toll on the environment, that campus-to-campus commute model has now changed for the better.

Technology has made staying in touch as easy as flipping a switch. And UBC has embraced several innovative video communications tools, not just to save travel time, but to help lessen the carbon footprint made by air and highway treks.

Todd Zimmerman, Senior Manager of Media and Classroom Services for information technology at UBC's Okanagan campus, says there are several options from vendors like LifeSize, Cisco, Vidyo, and Blue Jeans that make it possible to virtually link people anywhere in the world.

"We can now connect people quite easily. No matter what type of remote site they are working from, we can link just about anybody at any time."

In the past, it was often difficult to integrate different communications systems. However, that has changed, says Zimmerman.

"Given the cost of investing in these technologies we were often forced to have all participants use a single system," he says. "Now we have options that allow each participant to join in with the technology that best matches their environment."

This means high-definition cameras and multiple displays may be active at one site while another uses a single display or even simple audio, and all from different manufacturers.

So when UBC's fourth-year nursing students head off to Zambia or Ghana each spring, they can connect with faculty at the Okanagan campus via Skype, Google Talk, Vidyo, or other software on their hand-held devices even from remote villages.

"Thanks to investments by UBC and technology partner WestGrid, we have both the technology and the highly qualified personnel available to help determine the best solution," says Zimmerman.

Advances in synchronous technology have also made the delivery of UBC's Southern Medical program (SMP) possible.

UBC has been able to increase enrolment in the province's only medical school by using a "distributed education" model—where students in Kelowna, Prince George, Vancouver, and Victoria, participate in interactive, simultaneous lectures, explains Anthony Knezevic, UBC's Senior Manager for Collaboration Technology.

The SMP admits 32 new students each year as part of the overall distributed doctor of medicine class of 288. The students learn in custom-built lecture theatres in the Reichwald Health Sciences Centre and videoconferencing technology is used throughout their four years in the undergraduate program.

"Videoconferencing has certainly differentiated our medical program," Knezevic says. "We continue to rank among the top medical programs in Canada, and with the ability for students to attend and learn in different ways, enrolment has increased."

Videoconferencing in education is the new norm and Zimmerman notes that many UBC employees have tapped into the technology in non-curriculum usage, such as independent lectures, defence of a thesis, peer conferences, and research projects. On the Okanagan campus there are 35 rooms equipped with video conferencing equipment.

Zimmerman suggests the way of the future is already here.

"The technology is very well accepted at UBC," he says. "We have a young faculty and administration group, and they recognize this is the way to communicate while at the same time it's a great saving of time and money."

Media and Classroom Services Senior Manager Todd Zimmerman

Power of You volunteers Cara Kirkey (L) and Jacquetta Benard (R), and the Sustainability Office's JoAnn Rennick Brown

Show and tell. And walk.

WALKING TOURS DEMONSTRATE ECO COMMITMENT

What began as a question-and-answer exercise for curious visitors has evolved into a showcase of green facilities and features reflecting sustainable environmental, economic, and socially responsible values on UBC's Okanagan campus.

The Okanagan Sustainability Office at UBC's Okanagan campus put substance around the abundance of informal requests streaming in from the public, government officials, other institutions, engineering, and building professionals about eco-building initiatives. Many wanted to see sustainability up close, as the campus completed a $400-million build out, and the student population grew to 8,300 students from 3,500 students in 2005.

"There were so many leading-edge features and green highlights that we put together a Sustainability Walking Tour," says JoAnn Rennick Brown of the Sustainability Office. "We wanted to develop a program to respond to the opportunity to share and communicate our collective achievements."

Among the more recent "what's that?" features of the sustainability tour are pine beetle traps set up in strategic locations across campus to capture the grain-of-rice-size bugs that are devastating pine forests across BC and Alberta. While the pine beetle traps started as a research experiment using pheromone to capture beetles in 2008, the traps have been implemented into a best practice by Facilities Management to protect the campus' bountiful pine trees.

To date, more than 250 people, including government officials and international student groups, have taken the Sustainability Walking Tour, guided by Sustainability Office staff. Walking tour brochures are also available for self-guided tours.

Facilities Management has played a key role in expanding the walking tours by providing subject matter experts and independent geo-exchange and composting tours.

More recently, increased sustainability enquiries from potential and registered students have led UBC Student Ambassadors to approach the Sustainability Office asking for sustainability training. Student Ambassadors can now point out campus green features on their guided tours. Community members who have taken the tour have expressed the benefits in bringing UBC's sustainability features to life.

Michael Ross, a teacher and athletics coach at Okanagan Mission Secondary School, has brought two of his classes to campus to participate in the Sustainability Walking Tours. The tours gave the students an opportunity to learn more about the sustainability initiatives on campus with the aim of starting a similar composting program at his school.

"The tour gave high-school students tangible experience on how to compost, measure energy use in buildings using renewable geothermal energy, and design buildings with more foresight and better performance," says Ross. "Furthermore, they learned about campus life, what it may be like to attend as a student, the campus layout, and services."

Ross was among the first employees at UBC in 2005 and is impressed by the university's commitment and the massive progress made towards sustainability in only seven years. His Okanagan Mission students gained insight and knowledge during their visit to campus, says Ross.

"There is huge value in witnessing a shift in culture," says Ross. "UBC is a thought leader and influences many of our brightest minds. Demonstrating a new way of living that is more sustainable is critical to changing our culture."

Many features are not readily apparent, so the Okanagan Sustainability Office designed a brochure for the campus Sustainability Walking Tour. It maps and summarizes points of interest. Green highlights of the Sustainability Walking Tour include:

- Geo-thermal heating and cooling in all new buildings, with legacy buildings outfitted with geo-thermal heating;
- Composting station and compost bins in every building;
- 'Waterfillz' kiosks that supply filtered, cooled drinking water to cut down on plastic bottle waste;
- Leadership in Energy and Environmental Design (LEED) green building ratings;
- Green Globes building guidance and assessment programs;
- Solar panels on Purcell and Nicola student residences for domestic hot water preheating;
- Living green roofs on the Engineering, Management and Education Building, Reichwald Health Sciences Centre, and Purcell residences;
- Low-flow bathroom fixtures;
- Storm water retention pond;
- High-efficiency windows;
- Use of local materials.

Knowledge is power … to change

THE POWER OF YOU PUTS FOCUS ON INDIVIDUAL DECISIONS

Knowledge is power. And at UBC's Okanagan campus, power—or more specifically energy reduction—is all about knowledge.

The Power of You is a new engagement program developed by the Okanagan Sustainability Office aimed at creating a shift in energy use on campus by raising awareness of energy conservation practices.

Ensuring UBC's Okanagan campus is a special place to learn, live, and work is a responsibility that lands on Michael Shakespeare's desk. As Associate Vice-President Administration and Finance, Shakespeare and his team work behind the scenes to manage the physical and financial side of campus life and to provide exemplary service in a fiscally responsible way.

"The Power of You is aligned with UBC's sustainability commitments and is a key initiative toward campus energy and carbon reduction efforts," says Shakespeare.

Through a series of awareness campaigns aimed at faculty and staff beginning in fall 2013—developed in consultation with Facilities Management, Health, Safety & Environment, and other key stakeholders—Phase One of The Power of You will educate the community about how even small actions such as turning off lights, reducing the use of space heaters, and powering down computers at night, can lead to measurable improvements in energy use in academic buildings.

Phase One of the Power of You will also include a student residence pilot program designed to save energy by encouraging cold water, versus hot water use for laundry.

"The Power of You is about people and how we use energy on a day-to-day basis," says Leanne Bilodeau, director of Sustainability Operations. "Our everyday actions—deciding to purchase energy efficient equipment, or simply turning off the lights if we don't need them—have a direct impact on the energy conservation efforts of the whole building."

Bilodeau explains that The Power of You is a key component of an energy-reduction strategy for UBC's Okanagan campus. That's where the knowledge comes in. The Building Optimization Program, a collaboration between UBC and FortisBC, will involve controls- and infrastructure-related energy reduction measures in five original academic buildings (see the Building Optimization Program sidebar at right).

By measuring how much energy the campus buildings use, UBC can assess the information, make changes, and suggest actions everyone can do to help reduce that energy consumption.

"Through collective action toward energy conservation behaviours, we anticipate that the campus will achieve greater reduction in energy consumption over the course of the program than the Building Optimization Program could achieve alone," says Bilodeau.

This dual-pronged approach is supported by Natural Resources Canada and has been applied successfully at other institutions and in communities.

THE DASHBOARD

BUILDING OPTIMIZATION PROGRAM SUPPORTS BETTER STEWARDSHIP OF ENERGY

People are the drivers of energy consumption, but lighting, heating and other systems actually consume energy, and these systems are the targets of a comprehensive new energy management initiative called the Building Optimization Program.

Led by a team of Facilities Management, Okanagan Sustainability, and Information Technology Services staff, the program was launched in 2012, when the campus finalized an agreement with FortisBC to optimize the performance of its original academic buildings.

The three-year program allows for real-time energy consumption data collection in nine academic buildings. The data are gathered in real time, analyzed, and displayed on a publicly accessible Pulse Energy Dashboard.

Taking into account the Okanagan's variable seasons and campus occupancy, the software monitors energy use and identifies anomalies so building control changes can be made.

Starting in September 2013, Okanagan Sustainability Office and Facilities Management teams will begin to implement building retrofits and optimization of controls to accomplish targeted energy savings.

The dashboard provides a vital tool to monitor energy consumption and the impacts of energy reduction measures.

View the dashboard at: www.ubc.ca/okanagan/sustainability/sustcamp/projects/bop

Associate Vice-President, Administration and Finance Michael Shakespeare

Maintenance and Grounds Manager Al King

Right-sizing the trash can

ENHANCING THE CAMPUS-WIDE DESKSIDE RECYCLING PROGRAM

Quick quiz: What's yellow, black, or blue and can be found all over campus?

They are the new bins that accompany UBC's deskside recycling program. In early 2013, in an effort to reduce the total amount of garbage generated on campus and to make it easier for faculty, staff, and students to recycle, office and workstation garbage cans across UBC's Okanagan campus were replaced by containers. Along with the much smaller black garbage bins, workstations are now equipped with large blue recycling bins and yellow compost stations located in common areas across campus.

The deskside recycling program is just one initiative the campus has undertaken in response to three waste audits in 2008, 2010, and 2012. The biennial waste audits provide an enormous amount of information about the composition and volume of waste generated on campus as well as detailed recommendations to reduce and divert waste (see sidebar story).

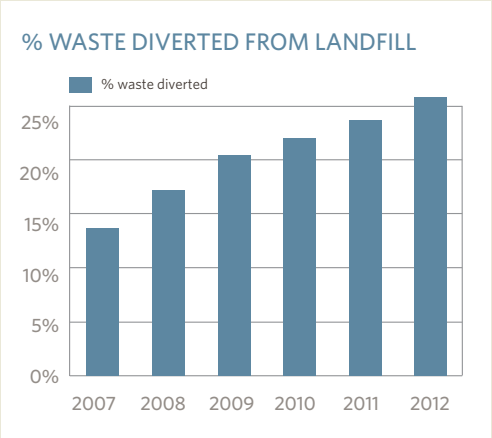
Al King, manager of maintenance and grounds, explains that the new bins are the latest enhancement to UBC's deskside recycling program, a joint initiative between Facilities Management and the Okanagan Sustainability Office. The aim is to reach a near-zero waste goal; in this case by dramatically improving office waste reduction on the Okanagan campus.

"Our objective is to create a new level of awareness about using the proper waste streams—we call this initiative My Waste, My Responsibility," says King. "The new, smaller garbage bins attach to the side of existing blue recycling buckets in each office. They complement the existing blue bins for recycling and yellow compost bins, to help direct all compostable and recyclable materials into the correct handling systems."

Campus waste diversion data demonstrates a consistent improvement in waste diverted from landfill since 2007 through various campus recycling programs. For example, the proportion of waste diverted from the landfill increased from 14 per cent in 2007 to nearly 26 per cent in 2012.

"That's a tremendous improvement," says King. "It's clear that we are moving in the right direction in overall diversion of waste generated, but there is lots of room for improvement in getting more recyclables and organics out of the garbage and into the recycling and composting bins."

Now that the new smaller bins are in place, the user of each workstation is responsible for disposing of blue bin recycling and the black garbage bin contents at the central collection stations located in corridors and foyers of each building.



Did you know...?

SAVE-A-CUP SAVES YOU MONEY

Food service outlets on campus including Tim Hortons, Starbucks, and Aramark will give you a discount off your beverage if you bring your own cup.

NO LINERS SAVES US MONEY

The new office garbage bins don't have liner bags. The cost savings on liner bags alone is expected to pay for the cost of the new bins in their first year.

REVENUE FROM RECYCLING FUNDS COMPOSTING PROGRAM

UBC now receives payment for recyclable materials, and revenue from recycling pays for the Okanagan campus's composting program—which helps keep the Okanagan campus one of the world's most beautiful university environments. In 2012, on-site composting resulted in approximately 40,000 kgs of organic waste diverted from the landfill.

REDUCING THE PRODUCTION OF WASTE IS THE BIG AUDACIOUS GOAL

The goal of deskside recycling is to reduce the creation of waste wherever possible. It also aims to ensure that recyclable material gets to the correct collection point, not into the landfill.

CAMPUS AS A LIVING LAB

School of Engineering's Associate Professor Kasun Hewage and Professor Rehan Sadiq

UBC seeks opportunities for synergies between operations, research and teaching, and sustainability. The green roofs and Fitness and Wellness Centre landscaping projects are examples that bring together faculty, staff, and the community to advance sustainable practices on campus and beyond.

Valley seeing green

While Keith Culver is known on campus as a busy multi-tasker—institute director, professor, advocate of the Okanagan valley as living lab—not many realize he has his administrative tentacles in many areas and has the reach of "a federating octopus."

Management professor Culver directs the Okanagan Sustainability Institute (OSI), an academic unit that conducts research at the intersection of water, urbanization, and rurality. Part of his job is to gather researchers and community partners together and find solutions to sustainability challenges. Locally and globally.

By doing so, the OSI expands existing interdisciplinary, inter-faculty research into partnerships at all levels of government, industry, and NGOs.

"Our translational goal on top of long-term, long-return research partnerships is to turn our research into practice," he says. In Culverian green-speak, he calls these practices "innovation blooms."

"We often start small, with highly-engaged community partners, then we start transferring knowledge and bloom up through the valley and beyond—as you can see with our green roof working group."

Within the OSI, the green roof working group is led by the School of Engineering's Rehan Sadiq and Kasun Hewage. Using 10 experimental campus green roofs, Engineering and Biology researchers are working with local, private-sector partner EnCircle Design Build to investigate the quality of water running off a variety of types of green roofs.

Meanwhile, other well-established operating green roofs covered in sedum plants on the Engineering, Management and Education Building, the Reichwald Health Sciences Centre, and the Purcell Residence are "performing better than expected," Hewage says. "We're not doing much maintenance, and the roofs are self-surviving with Okanagan rain conditions."

Low-impact developments such as LEED point-producing green roofs and walls—also known as "living" structures—can be found on the Vancouver campus and throughout the world. But what Sadiq and Hewage are pioneering is green-roof technology that uses inexpensive, locally available construction and demolition waste as the soil medium, crushed for optimal weight and particle size. Instead of intensive roofs—"like a park, needing skilled labour and regular maintenance," Hewage says—their focus is on relatively thin, lightweight, self-sustaining extensive roofs.

Factors include soil-layer materials such as concrete, drywall, bricks, sand, and wood chips, while minimizing structural weight and maximizing the quality of water run-off.

The PhD thesis for Sadiq and Hewage's student Mohammadreza Dabbaghian is life-cycle asset management of green roofs. His NSERC-funded research on roof performance monitors such things as pH levels, turbidity, and the effect of coconut-fibre filtration on nitrate removal.

The "dream," Sadiq says, is still theoretical: not just harvesting rainwater but improving it through the green-roof filtration process, using available cheap materials—for example, rice husks in Thailand—to absorb chemicals, creating potable water.

For now, the green-roof team is content to parlay its knowledge of material life cycles into industry and pan-university partnerships.

Collaborating with colleagues at UBC's Vancouver campus, one recent bloom is part of a research contract with Haworth, an American office furniture and "organic workspaces" company that had net sales of $1.38 billion in 2011. Sadiq and Hewage supplied a life-cycle assessment of Haworth's Biowall—an environmental partition wall based on geopolymers instead of natural or synthetic gypsum—while the Sauder School did the market evaluation.

The contract was secured with Culver's help, as was the September 2012 workshop with the Urban Development Institute's Okanagan chapter, which toured the experimental and operational, commercial-scale roofs. Culver is also the key UBC node in Peachland's New Monaco project, which aspires to use green roofs and be "the healthiest community in Canada."

In a parallel turn to develop sustainable communities, Sadiq and Hewage—with cash commitments from five local industry partners—applied for a large federal Collaborative Research and Development grant. Not surprisingly, Culver's connective tentacles had something to do with that, too.

Xeriscaping ideas take root

A patchwork of drought-resistant plants around The Hangar Fitness and Wellness Centre marks a sustainability precedent at UBC's Okanagan campus. The small but significant xeriscaping job inaugurates the Campus as a Living Lab ad-hoc committee.

Led by Keith Culver, Director of the Okanagan Sustainability Institute, the committee focused on the Living Lab objectives to enable teaching and learning opportunities through collaborative efforts and at the same time identifying native plants for optimal ecological function. The committee, using the knowledge of local xeriscape expert Gwen Steele, made its recommendations to UBC's campus architecture team.

Steele, the executive director of the Okanagan Xeriscape Association and a UBC alumna, summarizes xeriscape landscaping as "gardening with the climate." She champions long-term planning and a wealth of native and water-wise plants that thrive with minimal irrigation, maintenance, and pest control.

As a former xeriscape nursery owner on nearby Curtis Road, Steele took note of the wild vegetation on the campus periphery: Douglas maple and Columbian hawthorn trees, brown-eyed susans, shrubs such as sumac, ocean spray, wild rose—the list goes on.

This spring, the green space outside the gym's new annex was xeriscaped with drought-tolerant Eco Smart Blend sod, water-wise plants, and two sand volleyball courts. A gingko tree—a deciduous living fossil native only to China and Japan—was planted in the east alcove outside the gym.

"On the whole," Steele says, "the landscaping materials chosen for the site were appropriate for the light and low-water conditions. It's a positive example of Living Lab success as there was some consultation, interaction, and collaboration."

She commends the use of Eco Smart turf, engineered for the Okanagan climate; native yarrow; and an 'Autumn Brilliance' Saskatoon tree planted in the west alcove.

Along with the xeriscaping, a new volleyball space was built adjacent to The Hangar. Steele lauds the new sand courts as a welcome and essentially xeric substitute for turf. Partly influenced by the VOICE study, a healthy campus development project led by the School of Nursing's Assoc. Prof. Emerita Claire Budgen, the new sand courts actualize students' desire for more recreation amenities on campus.

Culver's ad-hoc committee—which includes Roger Bizzotto (director, Facilities Management) and Leanne Bilodeau (director, Sustainability Operations)—also collaborated with anthropology professor John Wagner.

Wagner's interest as an educator in campus xeriscaping focuses on teaching tools inherent in such natural UBC spaces as the pond behind the Engineering, Management and Education Building, the ponderosa pine forest, and Robert Lake in the Endowment Lands.

Campus as a Living Lab committee members are Director of Sustainability Operations Leanne Bilodeau, Okanagan Sustainability Institute Director Keith Culver, and Facilities Management Director Roger Bizzotto.

He takes his Anthropology 245: Culture and the Environment class on field trips there, immersing students in the cultural history of each landscape. Students tour the glacial remnants of hills and ravines beside the pond, an area full of native species such as the bunchgrasses that were a dominant feature of the Okanagan landscape before settlement.

The Hangar project is "a step in the right direction," Wagner says, "but I think more real language around ecological values is needed in future plans."

"Either way," he says, "I'm enthusiastic about the committee, what we're trying to do, and that Keith invited me to be a part of it."

Steele adds: "This is a really positive new direction. I've always felt that UBC's Okanagan campus could be a perfect example of appropriate native plant and water-wise landscaping—trying to create a sense of place, so that when you arrive at UBC, you don't feel like you're at just Anywhere Campus. You know you're at a distinctly Okanagan campus."

Okanagan Xeriscape Association Executive Director Gwen Steele and Anthropology Associate Professor John Wagner

VALLEY AS A LIVING LAB

District of Peachland Mayor Keith Fielding and Okanagan Sustainability Institute Director Keith Culver

UBC draws together highly engaged partners to co-define and tackle sustainability challenges relevant to the region. The New Monaco and Okanagan Aesthetic projects demonstrate how collaboration between researchers, community, and business results in research that will address important issues as the valley continues to evolve.

New growth, new vision, New Monaco

A steep, rocky hillside sloping towards Okanagan Lake may not seem like a typical university lab. But for researchers at UBC's Okanagan campus, it's the perfect Petri dish.

UBC is home to the Okanagan Sustainably Institute (OSI), where faculty and student researchers view the entire valley as a living lab. And Mark Holland, project manager of the New Monaco development—a proposed 125-acre community to be built at the northern end of Peachland—thought of UBC and the OSI when he began drawing up plans for the multi-year development proposal.

"I wanted to draw UBC and its researchers out of the Okanagan campus and into the valley and I thought the OSI was the right avenue to achieve this," says Holland, a UBC alumnus.

The MOU allows for a number of different research projects, following the theme of a sustainable community, to be explored as New Monaco is developed. Waste water management, cumulative development effects on birds of prey, and building energy efficiency are among possibilities.

New Monaco, adopted into Peachland's official community plan in 2011, will be a sustainable community with mixed housing and retail and commercial zoning. The ultimate projection is that New Monaco will one day be home to 5,000 people, doubling the population of Peachland.

District of Peachland Mayor Keith Fielding says the collaborative approach developed between the district and New Monaco provides a great example of how communities can be engaged in planning future growth.

"The relationship exemplifies best practices with respect to community consultation and the quest to ensure healthy and sustainable outcomes," says Fielding. "The developers and district staff have a very effective working relationship and we look forward to an exciting and exceptionally well-planned new neighbourhood in our community."

For UBC researchers, the development project is a blank canvas and OSI Director Keith Culver says several faculty and post-doctoral students have identified specific research ideas. The OSI is an interdisciplinary, inter-faculty institute that focuses on research, scholarship, and creative work relevant to issues of long-term sustainability.

"We want to engage the public when it comes to development in the valley," Culver says. "We want a broad dialogue about development, but we don't just want to ask 'what do you want in the valley?' We want to go further. We want to work with communities to develop a deeper vision of the Okanagan and what it can be at a time of rapid change."

Culver says New Monaco is a unique collaboration that engages faculty, students, area municipalities, and even engineering firms, developers, and utility providers such as FortisBC.

"The easy answer is to do what you've always done," says Culver. "But is that the right thing? We have to ask, if the New Monaco development will double the size of Peachland's population, what effect will this have on the environment? How is water to be delivered to the site? Does the site really need beautifully manicured green lawns? How do these people get to work, to the store, or to recreation? These are some of the questions we need to answer."

While much of New Monaco's future is still on paper, and Holland doesn't expect shovels to get into the ground much before 2015, the research done now will help ensure that New Monaco is developed in such a way that the impact on the semi-arid environment is minimal.

VALLEY AS A LIVING LAB

Interdisciplinary Performance Assistant Professor Denise Kenney

Finding out what matters most

If you ask five different people for an iconic, yet natural, image of the Okanagan Valley, chances are you will get five completely different answers.

And that's the beauty of this area; whether it's the Ponderosa pine, the lakes, the steep hillsides, or the flora, there are so many natural wonders in the Okanagan and each evokes a different sense or emotion in people. For two UBC researchers, identifying those iconic images, and finding ways to preserve and appreciate them, has the pair scouring hillsides, beaches, and communities looking for answers.

Associate Professor of Creative Writing Nancy Holmes and Assistant Professor of Interdisciplinary Performance Denise Kenney at UBC's Okanagan campus are members of the Okanagan Sustainability Institute's Okanagan Aesthetic Working Group. With the assistance of a grant from the Social Sciences and Humanities Research Council, and under the auspices of their umbrella project The Eco Art Incubator, the group is gathering information about important aesthetic values of the Okanagan Valley and how they can be maintained and protected.

"We're asking people, 'What do we have in the valley, what do we love about the valley, and what are we afraid of losing?'" says Holmes.

The working group hopes to establish design guidelines that will help municipalities and developers deal with growth. Its end goal is to establish widely-adopted guidelines that complement the Okanagan climate, culture, history, industry, and lifestyle.

They point to Peachland as a good example of a community working to preserve its inherent beauty. The area is slated to change dramatically during the next 10 years, with the development of the 125-acre New Monaco site just north of town. The development is part of Peachland's official community plan and the district is working with the developers and UBC's Okanagan Sustainability Institute.

Kenny also points to the community's reaction when renovators discovered a large colony of Yuma bats in the attic of the former Peachland Primary School. The community rallied around the bats; renovation was halted until the bats could be studied and counted. The colony, possibly the largest in North America, is now protected and the community hosts science talks, organized bat counts, school field trips, and bat-friendly eco-tourism programs.

"The Peachland bats are a good example of community engagement and they generated a discussion about what was important to the residents," says Kenney. "Development is happening around us, and right now people are working hard to preserve the orchards. But we need to stop and think about what was here before the orchards, because the orchards changed what was here previously."

As part of this group, Kenney is working with the developers of the New Monaco site and will install several time-lapse cameras on the property, which will film how the landscape changes during construction. The multi-year documentary project will witness the metamorphic change from old orchard and rocky bluffs to multi-use development.

"Art is an interesting way to get people to talk about issues they are passionate about," says Kenney. "The feeling that people have towards a place is something that we should record. With New Monaco we are going to witness, write about, act, perform, and photograph the changes and this will all culminate in a documentary about the transformation of that property."

With development happening at a rapid pace, the pair is aware that this type of research should have begun years ago. They are anxious to start talking with people, getting answers to what matters the most, and working to preserve the beauty of the valley.

"We are living in a homogenous world where all the box stores on the highway look the same and we're told how to shop, how to dress, how to look," says Holmes. "We want people to put something forward that they find special about the Okanagan. Is it the lakes, the views, the wineries, the arrowleaf flowers? What is it essentially about this place that evokes this sense of emotion and how do we maintain and protect it?"

Sustainability Innovation and Recognition

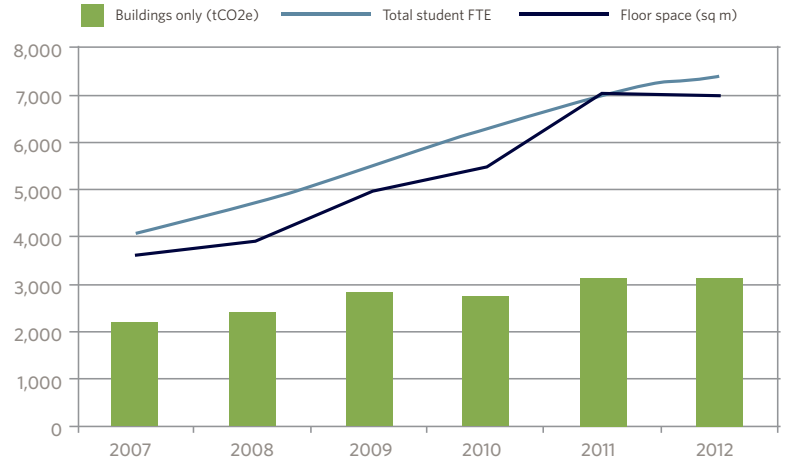
A YEAR IN REVIEW

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

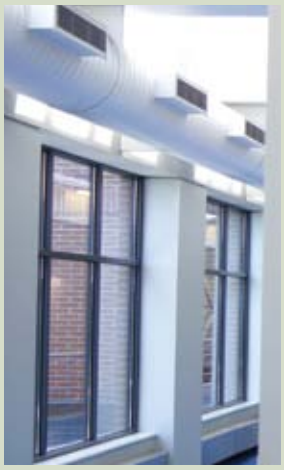
In 2012, UBC's Okanagan campus received more than $200,000 in rebates from the FortisBC PowerSense program for leadership in energy-efficient design of new construction and energy conservation measures in original facilities that will save the campus $150,000 in annual utility costs. Both academic and 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.

Sustainability Innovation and Recognition

A YEAR IN REVIEW

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.

ENVISIONING A SUSTAINABLE FUTURE

UBC's Okanagan campus has developed sustainability initiatives and commitments that deeply align with advancing *Place & Promise: The UBC Plan*. The campus is committed to responsible stewardship of sustainability at all organizational levels, to reduce our environmental impact and embed a culture of sustainability.

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ACKNOWLEDGEMENTS

Thank you to the dedicated faculty, staff, students and community partners who contributed to this year's SHIFT magazine, the University of British Columbia Okanagan Campus' annual sustainability publication.
We are honoured to share and celebrate your success stories and thank you for your contributions to sustainable development on campus and in the community. We also wish to extend a special thank you to our utility provider FortisBC for your partnership in energy efficiency; to Gwen Steele, community partner for furthering sustainable campus development and the District of Peachland Mayor, Keith Fielding and the New Monaco development for your partnership in sustainable community development.

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sustainability