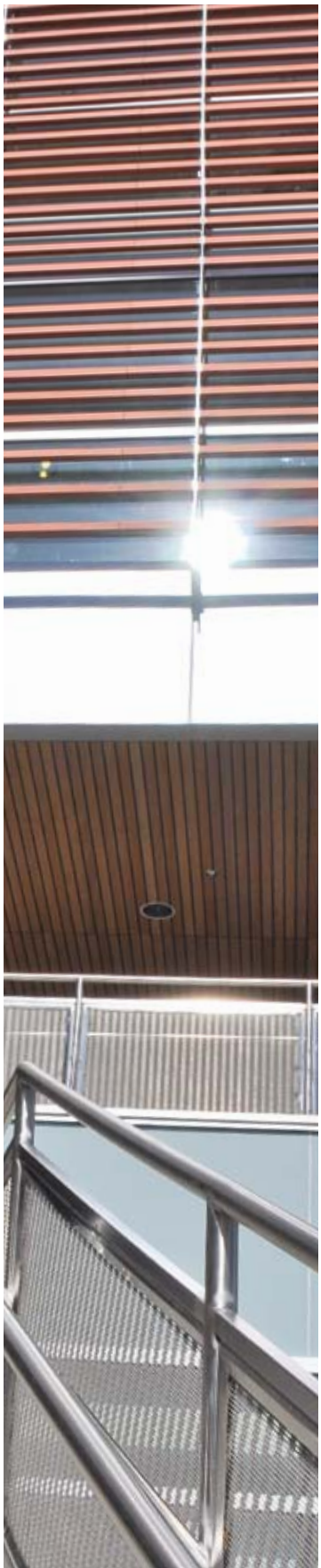
shift

SUSTAINABILITY INITIATIVES AT UBC'S OKANAGAN CAMPUS

a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA | OKANAGAN SUSTAINABILITY OFFICE | JUNE 2011 | WWW.UBC.CA/OKANAGAN/SUSTAINABILITY



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

SHIFTING PERSPECTIVES

Building a campus is like building a community. To responsibly steward the rapid growth and development of this community, UBC's Okanagan campus has placed sustainability at the core of all our planning processes and strategic directions. While much of the focus has been on sustainable growth of the campus infrastructure, the resilience of the campus community is of equal importance. Our campus sustainability commitments position us to strive for an integrated approach that serves to advance the environmental, economic, social and cultural dimensions of sustainability on campus and beyond.

We are pleased to present this year's *Shift* magazine to highlight our collective sustainability achievements and directions as a campus, and as members of our community. Together, we are striving to make a difference now and for future generations to come.

Jackie Podger
Associate Vice President, Administration and Finance
Okanagan campus

Climate change, sustainable development and healthy, resilient communities. These are just a few issues that come to mind when we think of sustainability. Sustainability is also about shifting our perspectives to an integrated view, so that we can begin see how our values, actions, cultures and systems influence sustainability in everything we plan and do.

At UBC's Okanagan campus, sustainability is a part of our campus operations, research, teaching and campus community. It's about aspiring to develop and model innovative solutions for a resilient future on campus and beyond – through integration, collaboration and partnerships.

The people and projects featured in this year's edition of *Shift* highlight some of the unique ways our faculty, students and staff are advancing sustainability and shifting to integrated approaches. Whether it's working with the City of Kelowna to apply our research locally or collaborating with faculty and students across disciplines to create tools to model the impact of climate change, collaboration and community are at the heart of our work.

We welcome you to join us as we share our journey toward a sustainable future – a future built by the capacity of many leaders, faculty, students, staff and community members who are working in concert and are making a difference.

Leanne Bilodeau
Director, Sustainability Operations
Okanagan campus

FROM STRATEGY TO ACTION: TAKING SUSTAINABILITY TO THE NEXT LEVEL ON UBC'S OKANAGAN CAMPUS

It all starts with a plan: a scheme or method of proceeding developed in advance; defining the steps necessary to complete a definite purpose.

After five years of building UBC's Okanagan campus identity, it was an ideal time to review progress and move forward with a plan. In 2010, UBC's Okanagan campus distributed the Strategic Action Plan.

Developed as part of the strategic planning exercise for Place and Promise: The UBC Plan, the Strategic Action Plan highlights the distinctive features, opportunities and potential of the Okanagan campus. Sustainability is one of four Priority Themes identified in the plan. From the outset, the Okanagan campus has been dedicated to building a sustainable community, in terms of both the environmental sustainability of physical infrastructure and the social sustainability of the learning and working environment.

It's a plan that is great in concept, yet it begs the question – can the University put this plan to action?

According to Alaa S. Abd-El-Aziz, Provost and Vice Principal Academic and Research, and leader of the planning process, it's a challenge the campus is not only willing to take on, but determined to win.

And, progress on sustainability so far is a great example of meeting this goal.

"Acting on the sustainability commitments we put forth is crucial in building a campus culture that truly embraces sustainability," says Abd-El-Aziz. "UBC's Okanagan campus isn't looking to only be a sustainable campus, it wants to be the sustainable campus – leading the way and becoming the most sustainable campus in the country."

Becoming a leader requires great leaders with vision. The Okanagan campus has recruited just such a visionary – an internationally recognized leader in sustainability – to direct the campus' Okanagan Sustainability Institute.

In 2011, Keith Culver joins the UBC community, leaving his current position at UniverSud Paris as International Chair in Generation Eco-Innovation.

"Keith brings a wealth of knowledge and experience in sustainability leadership and he is a great asset for our campus," notes Abd-El-Aziz.

The installation of a new Director is a major step towards fully integrating and supporting sustainability in academic programs, operations and the campus community to create an all-around healthy, vibrant and sustainable campus culture.

Culver will work closely with Leanne Bilodeau, Director of the Okanagan Sustainability Office. Together they will use diverse but parallel pathways to campus sustainability in an integrated and complementary approach.

"Bringing together academic and operation at a strategic level is a unique collaboration," says Abd-El-Aziz. "This approach is truly at the core of what sustainability is all about and will enable us to strengthen our position and move forward."

2010 SELECTED HIGHLIGHTS

Sustainability is the common thread that weaves through our campus operations, our teaching and research and in our community outreach and partnerships. Here are just some of the past year's highlights on our collaborative journey to advance sustainability.

GAINING GROUND ON CAMPUS OPERATIONS

Water efficiency inside and out

Improving water quality and reducing consumption across the campus is a priority. All new academic buildings and student residence buildings have water-saving fixtures. Thanks to a partnership between the Sustainability Office and the Student Union, WaterFillz kiosks will provide free, filtered water in three of our new academic buildings, helping reduce the number of plastic bottles from entering our waste stream. Outside, a Hunter-Wireless Irrigation System implemented by Facilities Management adjusts or ceases watering based on temperature, precipitation and wind speed.

The new WaterFillz Kiosk in the Arts and Sciences II building has diverted close to 9,000 single-use plastic bottles from the campus recycling stream in just six months of use. The units only use 12 watts of electricity for ultraviolet purification. When the refrigeration unit is running to cool the water to 38 degrees F, it only requires 46 watts of power versus vending machines that can draw over 1,500 watts of power.

Composting collegia

The addition of two small pails on the third floor of the UNC building is helping meet sustainability goals. Fourth-year student Michelle Yule spearheaded a composting project under the supervision of Geography professor Mary Stockdale. Students and staff are encouraged to dispose of their compostables into the "earth tubs" and it's hoped the project will expand campus-wide in the future.

Recycling re-vamped

Helping people on campus understand what can be recycled will encourage more compliance and reduce the amount of recyclable materials in our landfills. In a partnership between the Okanagan Sustainability Office and Facilities Management, new campus-wide recycling signage was installed to help you find the right slot for your paper, plastic, refundables or coffee cup.

More than 6,000 litres of lab plastics have been recycled thanks to a partnership between the Okanagan Sustainability Office, Health, Safety and Environment, Facilities Management, Supply Management and Fisher Scientific. Revenues from recycled plastics go towards green lab initiatives.

Thanks to our partners in advancing sustainability

City of Kelowna
Climate Action Secretariat
Fisher Scientific
FortisBC
Fresh Outlook Foundation
Glenmore Neighbourhood Association
GreenStep
UBC Students' Union Okanagan

ENGAGING OUR COMMUNITY

Small steps, big leaps

Partnering with the Climate Action Secretariat and the Fresh Outlook Foundation, the Okanagan Sustainability Office hosted the Thompson Okanagan region's Provincial Climate Action Workshop in September. The two-day event drew participants from government, business, academia, not-for-profit and public sectors. The workshop focused on increasing collaboration between sectors; providing targeted training to support carbon reduction efforts; engaging the community through climate change visioning, which links science, local input and planning information with mapping and 3D climate adaptation visualization tools.

REEL change

The Fresh Outlook Foundation partnered with the Okanagan Sustainability Office and Leo's Videos to host the second annual Reel Change SustainAbility Film Fest on campus. This film fest featured a variety of sustainability topics including child exploitation, climate change, education reform and sustainable architecture. Each film was followed by a panel discussion involving campus faculty, students and participants from the business, not-for-profit and public sectors.

Welcoming your participation

World Water Day is a community-based celebration led by Dr. John Wagner in concert with faculty and student sustainability visionaries. Held in March, this annual event welcomes the participation of campus, local community, First Nations and civic leaders, to raise awareness about water security issues regionally, nationally and globally. Of the many events held on campus, highlights included the Mayor's Youth Forum on Sustainability, Green Research Workshops and Campus Sustainability tours.

CREATING A SUSTAINABLE CAMPUS CULTURE

Celebrating our success

UBC's Okanagan campus has achieved recognition for its efforts on many levels. In 2010, we received the City of Kelowna Mayor's Environmental Achievement Award for Most Sustainable Development and Most Environmentally Dedicated Individual (Alan King, aka "Compost King," Facilities). The campus was also awarded five Green Globes for the new Arts and Sciences II building for highest achievement for environmental and energy performance.

It's just part of our culture

Sustainability is part of regular business for Facilities Management. They have taken the lead to develop and implement an anti-idling procedure for fleet vehicles, including driver training to help reduce greenhouse gas emissions. They have also implemented a practice to replace older vehicles with electric and energy efficient models.

From left to right: Ron Mattiussi, Leanne Bilodeau, Mayor Sharon Shepherd and Jackie Podger

MOVING FROM RESEARCH TO COMMUNITY SOLUTIONS

> "It's about creating an opportunity to bridge the gap between the knowledge we generate and share to help our communities become more sustainable."

Whether it's research, student projects or staff initiatives, sustainability is a thread that weaves throughout UBC's Okanagan campus. And creating liveable, vibrant communities is a cornerstone for Kelowna Mayor Sharon Shepherd.

So when the two agreed to work together on a new sustainability pilot initiative, it was a perfect match.

"Partnering with the City makes perfect sense," says Jackie Podger, UBC's Okanagan campus AVP Administration and Finance. "We are a part of our city and the contributions we make to advancing sustainability on and off campus can serve to advance our collective sustainability goals."

The new pilot grant program aimed at sustainable community development projects in Kelowna was spearheaded by the Provost and Vice-Principal of UBC's Okanagan campus in collaboration with Mayor Sharon Shepherd, City Manager Ron Mattiussi, Podger and Leanne Bilodeau, Director, Sustainability Operations at UBC's Okanagan campus.

"UBC's Okanagan campus is aspiring to become the most sustainable campus in the country. And Kelowna is striving to become one of Canada's leading cities when it comes to sustainability. We share that mutual interest and, by working together, we can achieve great feats for our community," says Provost and Vice-Principal, Dr. Alaa Abd-El-Aziz. "The University was keen to provide seed funding, through the UBC Sustainable Development Internal Grant program, to foster opportunities for collaboration between our researchers and community members. This funding will support the development of innovative projects, with mutual benefits to both partners."

A meeting was held with key contacts from UBC's Okanagan campus, the City of Kelowna, community groups and other agencies to brainstorm research project ideas. As a result, faculty submitted applications and of those, three projects that met the program criteria were awarded a grant. These three research projects will examine ways to reduce water use in public parks, explore new public transportation options and bring together neighbourhoods through performance events and potluck dinners.

"We're grateful to UBC's Okanagan campus for their commitment to sustainability and for the potential benefits we can capture from the research," says Mayor Shepherd.

Bilodeau says the grant program is a win-win for both the University and the City.

"It's about creating an opportunity to bridge the gap between the knowledge we generate and share to help our communities become more sustainable. Bringing together our faculty, staff and students with the community and key City staff in this way is a unique approach to the development of practical, local sustainability solutions," she says.

The three funded projects are:

REDUCING WATER USAGE IN CIVIC PARKS USING ADAPTIVE IRRIGATION

Ramon Lawrence, Associate Professor of Computer Science, PhD candidate Scott Fazackerley, undergraduate student Ryan Trenholm and Neal Klassen, coordinator of the City of Kelowna's Water Smart program, are looking at reducing water use in civic parks using adaptive irrigation. The goal is to customize and install an adaptive irrigation system in a portion of a civic park alongside a conventional system. The expected result is substantial – up to 50 percent savings in water use.

SUSTAINABLE GLENMORE TRANSPORTATION COMPASS PILOT PROJECT

Gordon Lovegrove, Assistant Professor of Engineering, is working with Bernard Momer, Associate Professor of Geography, on a sustainable transportation pilot project that will explore the Sustainable Glenmore Community Universal Transportation Pass System (ComPASS). The goal is to develop an integrated, sustainable transportation system that competes with, and cuts down the use of, single-occupancy vehicles. Users will be entitled to privileges at various stores, gyms, coffee shops and the like to encourage them to hop on the bus, bike and/or sidewalk.

SOCIAL POTLUCK

Gabriel Newman will create a project combining theatre, storytelling, community-building, community art and community food action as part of a Master's in Fine Arts thesis supervised by Neil Cadger, Associate Professor in the Performance program. The project's first of two acts involves Gabriel hosting five free dinners – with food from local suppliers – in exchange for stories from those who attend. The second act involves Gabriel presenting a performance, based on the stories collected, at a community potluck dinner.

SUSTAINABLE FROM THE START

"Sustainability needs to guide our decisions when planning our communities. Being able to partner with others who are incorporating sustainability into their work gives our students the chance to apply their knowledge in a real-world setting."

Bernard Momer is a big believer in putting theory into practice. So what's better for his Geography students than planning a sustainable community on a 125-acre property in Peachland.

"I asked students to come up with a community plan taking into consideration urban design, zoning and sustainability. It's a real-life project that allows students to bridge theory and practice, it's not totally academic," explains Momer, Associate Professor of Geography.

The expansive New Monaco property is located on the eastern edge of Peachland near the junction of Highway 97C. The planning and design firm, HB Lanarc, describes the proposed project as "an integrated village that is socially, environmentally and economically sustainable."

"What attracted me was that HB Lanarc is incorporating sustainability and I felt New Monaco was the right size, scope and vision for the students," he adds.

Momer's students are excited to work on the unique project.

"It's a tough assignment but it's also a chance to be creative and design a community," says Dana Barnes, a fourth-year Geography student. "It's great to be able to apply what we've learned."

The students' presentations included plans that went beyond the norm in building a sustainable community such as solar panels, green spaces, higher densities and minimal construction footprints. Rather, they also looked at ways to encourage cultural sustainability by adding spaces where people can gather, such as a farmers' market, rooftop gardens and street-side cafés.

"The physical part of planning a sustainable community is really important but what I find intriguing is what makes people want to be sustainable. You can build in all the gadgets you want but if people aren't willing to buy into it, then it's not going to go anywhere," says Momer, whose own focus is social and cultural sustainability.

Transportation was also key to the students' plans for a sustainable community. Momer believes that creating walkable neighbourhoods where people are physically connected helps create a sense of identity which then encourages people to become more engaged and participate in their communities.

"That idea of creating a sense of identity by being a part of the neighbourhood and communicating with each other is more likely to help people to engage and adopt sustainable behaviours," he adds.

All of the plans for sustainable development will go to HB Lanarc, who is keen to hear the students' ideas.

"We were honoured to meet with the Provost and Vice-Principal and key contacts at UBC's Okanagan campus and we value any opportunity to partner," said Mark Holland, Principal, HB Lanarc.

Momer hopes the project will initiate more community partnerships with the university. And maybe one day, a student will see their ideas set in stone or in play at a sidewalk café.


co West

BLENDING SUSTAINABILITY

> "Much has been discovered about wine and we know we have more to learn. Our goal is to improve the sustainability of our wine industry – blending science with our senses to enhance the quality of the wine we produce."

The Okanagan Valley has come a long way since Father Pandosy came from France, settled in Kelowna and planted the first grapes more than 150 years ago in the Okanagan Mission area.

Today the Okanagan's wine industry boasts close to 200 wineries, many featuring internationally recognized and award-winning wines, with combined sales of nearly $182 million a year.

And Cedric Saucier, Associate Professor of Chemistry at UBC's Okanagan campus, hopes his research can only improve the region's fine wines.

"I was drawn to this region because the Okanagan has the perfect combination of soil, slopes and sunshine necessary for producing award-winning wines," says Saucier, an expert in wine chemistry who hails from the Bordeaux region of France. "Our research will help us build on the economic, environmental and cultural sustainability of this growing industry."

Saucier and his team of students are looking at nitrogen and how it affects the tannins in wine – the chemical compounds that give wine its colour and taste. Given the Okanagan's dry, sandy soils, finding the right balance of nitrogen is key to producing quality wine grapes. Their research on local wines looks at how tannins ripen in the grape and their evolution during fermentation and ageing in tanks, barrels and bottles. They are working to produce molecular markers to help identify when the sugar, acidity and tannins are perfectly balanced, thus enhancing grape-growing and winemaking.

"We want to understand how the tannins in the seeds and the skins of the grapes ripen as they grow and ferment," says Saucier. "Our goal is to improve the sustainability of our wine industry – blending science with our senses to enhance the quality of the wine we produce."

Tannins are important not only for the colour and taste of wine but they also contribute to its health properties.

"More recent research provides evidence of the health benefits of red wine in particular – something to be savoured in addition to its taste," says Saucier. "The health benefits also add to the cultural and social sustainability aspect of wine as it has become part of the Okanagan lifestyle – the aroma, the taste and the sense of community that comes with enjoying wine with family, friends and neighbours over a slow meal."

Saucier has established strong connections to the industry. In addition to his research, he is collaborating with the BC Wine Grape Council and working with grape growers.

"It's an exciting collaboration to help support research and ways that we can collectively improve," says Saucier. "We are able to bring science to the art of growing wine grapes and winemaking. Creating a good product is what sustainability in the wine industry is all about."

He has also established the first Enology program at a BC university, helping students understand the process of making wines and how to adapt the science to the local conditions.

Saucier's research is an important part of a larger proposal to develop a wine institute at UBC's Okanagan campus that will focus on policy, research and professional education – an indicator the campus is keen to contribute to the sustainability of a key industry in the region. The institute will help facilitate all aspects of the wine industry and related sectors, from policy and production through distribution, marketing, finance, tourism and economic impact.

"UBC's Okanagan campus strongly believes that our research directions should be relevant to the Okanagan while working at the highest national and international standards," says Doug Owram, Deputy Vice Chancellor and Principal of UBC's Okanagan campus. "The proposal to build a winery institute meets both of these objectives. It will serve a growing industry in the Okanagan while forming connections around the world. It will advance research, professional education and student learning at an internationally recognized level."

MORE THAN JUST A WALK IN THE PARK

> "Using eco-art as an outreach tool to help people understand and connect with their environment is a new and growing field. It's art that inspires us to think about sustainability, about what we will leave for future generations."

For Nancy Holmes, what started as a simple walk in her neighbourhood park has turned into a passion. This past year, Nancy, together with local artist and park caretaker Lori Mairs, launched the Woodhaven Eco-art project, turning Woodhaven Nature Conservancy Regional Park into a natural canvas.

"Woodhaven makes a perfect stage for art and the environment to meet," says Holmes, Associate Professor of Creative Writing at UBC's Okanagan campus. "Our idea was to deliver our message of conservation and sustainability set against this amazing backdrop."

Woodhaven is a little-known oasis, located near the end of Raymer Road in Kelowna. Woodhaven was slated for development in the early 1970s and was spared thanks to the determination of dedicated naturalists, Jim and Joan Burbridge. Today, the woodland park is managed by the Regional District of Central Okanagan (RDCO) and includes four distinct natural ecosystems.

Holmes says artists have long had a connection with nature, creating interpretations on our environment. A key principle of eco-art is to let nature's offerings foster the artist's creations, with minimal impact on the environment. The art did not remove or damage anything in the park or leave anything behind.

"Art makes people feel something. Eco-art puts a new lens on public spaces and helps us experience that space in a whole new way," says Holmes. "It's art that inspires us to think about sustainability, about what we will leave for future generations."

This past summer, park visitors were met with a variety of visual delights and performing arts. More than 80 student and community artists created 60 original works of art, including poetry using rocks and fallen logs, sculptures and natural object installations, paintings and photography for display in the park. Audio downloads were created for special guided walks, and visitors were invited to leave notes for Holmes that she later weaved into a poem. Photographs of these works of art can be found on the project website at **www.woodhaven.ok.ubc.ca**.

"It was fantastic! I've told a million people about the project," says Rose Sexsmith, an enthusiastic park visitor. "I love how they combined different kinds of art with nature. It helped me think about my relationship to the natural environment, and how we are so connected. It also made me realize that we need to do more to protect special places like Woodhaven."

Live performances were also scheduled throughout the summer, culminating in the inspiring "Chainsaw Ballet." Directed by Denise Kenney from UBC's Okanagan campus Performing Arts, students with decommissioned chainsaws paid homage to the foresight of Joan and Jim Burbridge, who worked so tirelessly to ensure the park would be available for future generations.

"What makes this project unique for our students is the ability to engage their audiences," says Holmes. "Using eco-art as an outreach tool to help people understand and connect with their environment is a new and growing field. The issues they are grappling with here are both local and global, such as deforestation or conservation."

The project was made possible through a powerful collaboration. Thanks to a grant from UBC's Hampton Fund, Holmes and Mairs created the partnerships necessary to bring the project to life. With sponsorship from the RDCO, local artists, conservation groups and Holmes' students worked together to plan, promote and create. Closer to home, they also engaged the community neighbourhood as both patrons and stewards of the park.

"The response was immediate, positive and rewarding," reflects Holmes. "Our partnership with the RDCO grew over the summer in recognition of the success of the project, and we're looking forward to developing similar projects in other parks in the future."

The future for eco-art is bright. The project will be captured in a documentary and thanks to a grant from the Social Sciences and Humanities Research Council, a "recyclopaedia" will be created as a resource for those who want to lead the way by changing how we look at simple things in life – like a walk in the park.

FLOWING WITH SUSTAINABILITY IN MIND

"Maintaining our water distribution systems is fundamental to community sustainability. When you consider that 20 to 50 percent of our drinking water can be lost due to leaky pipes or erosion, it's critical to make informed decisions about when and where to invest in replacing or upgrading water lines."

When we turn on the tap, we expect it to be there – a cool, fresh and constant supply of clean drinking water. But do we really give any thought as to how it gets there?

For Rehan Sadiq, Associate Professor of Civil Engineering at UBC's Okanagan campus, it's all he thinks about.

"Maintaining our water distribution systems – the way we get water from its source to our taps – is fundamental to community sustainability, yet it's not something most people think about," says Sadiq.

Most Canadians have ready access to seemingly unlimited amounts of freshwater and consume more water per capita than any other country, other than the United States. As the economy continues to grow, the result is that municipal water use strains the capacity of water supplies. In drought-prone areas such as the Okanagan, there is little margin for handling water shortages.

"A sustainable water system includes three components: the quality of the water, the quantity or amount of water we get when we turn on the tap and its continuity. When one of these is compromised, the system is no longer sustainable," says Sadiq. "Given the challenges we face with increasing drought conditions, we need to create better tools to help decide what part of the system needs replacing or repairing and when."

Unlike a pothole in the road, the challenge is that water systems can't be seen. For example, 20 to 50 percent of treated, drinkable water can be lost due to leaky pipes and erosion of pipes from surrounding soil. The water distribution infrastructure – all the underground water mains and water lines that bring water from the source to our homes – is the most expensive and challenging part of the system to maintain, yet it is critical to ensuring that constant supply of water.

Behind the scenes, local governments and water suppliers struggle to balance budgets and make decisions about multi-million dollar investments in repairing or replacing water lines. In many communities, like London (UK) and Montreal, this infrastructure can be 150 to 200 years old.

"While the age of the water pipes often determines when it needs to be replaced, a far better strategy is to determine how that infrastructure is functioning and whether it needs replacing," says Sadiq. "It's like assessing the health of an individual. We can be old but in good health, or young and in need of care. We need a better strategy to assess when to invest in costly replacement or repairs. We need to know the overall health of the system."

Working with the Water Research Foundation, UK Water Industry Research, Infrastructure Canada and the National Research Council of Canada, Sadiq and his graduate students are developing tools that local governments or water suppliers can use to make better decisions around infrastructure replacements. He has developed a risk-based approach to decision making for the replacement or rehabilitation of water pipes. This includes programs to assess the viability of the water distribution system and make predictions that can help local governments set priorities.

"It's about maintaining a healthy water distribution system that will serve current and future generations. Without a sustainable water distribution system, the environmental, economic, social and health impacts are too great."

Going forward, Sadiq, with another colleague Dr. Solomon Tesfamariam, is working with local consulting firms to help them develop basic tools that municipalities can use to make capital investment decisions around the infrastructure that supports their communities, as well as working directly with municipalities.

BEHIND THE SCENES

> "At UBC, moving towards sustainability comes down to a simple principle – do unto future generations as you would have them do unto you."

Recent achievements in both the Library and Information Technology Services are testament to this sustainable way of doing business that combines customer service and innovation with an eye to the future.

"Integrating sustainability into our work is part of our DNA – it's core to what we do," says Don Thompson, Chief Technology Officer. "Aside from the obvious global implications, we're always looking for time, operational and energy efficiencies. The whole focus of this campus has been around sustainability from the start."

BEHIND THE SCREEN

The heat generated from thousands of computers, servers and monitors across the university is significant – enough that it became a major focus for the IT department.

"We are computer users and that's not going to go away. But if we're more efficient in how we use computers, that can make a real difference," says Thompson.

Key has been the move to server virtualization. The number of servers was reduced to four from 100, and the heat generated in the server room will be fed into the campus geo-exchange loop, essentially heating other campus buildings in winter and reducing energy consumption demands.

The department is also testing desktop virtualization, reducing the need for the individual towers under each desk, and streamlining how staff and students use copiers and printers. Strategically locating central copiers in each building can reduce the number of individual machines that consume significant amounts of energy.

"The eventual goal is to become a carbon neutral campus. That's a big deal for me," adds Thompson. "It's the right thing to do for the environment, to be responsible. We're all doing our small part in the grand scheme of things."

BEYOND THE STACKS

At the library, a cross-departmental "Green Team" came up with different ideas to foster sustainability and help make that public space more environmentally friendly. It was essential given that more than 5,000 people use the library every day.

"Initially we tackled the "low-hanging fruit" such as using double-sided photocopies, reusing scrap paper and increasing awareness around buying green products for the library," says Melody Burton, Chief Librarian. "But sustainability has become a much bigger lens for us. It has changed our way of thinking about everything we do."

A significant project over the last year involved 200 old, cushioned wooden chairs that were starting to wobble and the upholstery unglued. But rather than discard 200 chairs into the landfill, they opted to refurbish them.

"Some just need a little fixing up. We had to ask ourselves 'Do we throw them all out and buy plastic or invest in fixing what we have?'" says Burton. "There were so many positives to refurbishing the chairs – using local skills, saving waste from the landfill, more comfort and we've extended their lifespan."

For Thompson and Burton and their teams, the different initiatives have now raised the question of where to go next.

"We've done the obvious, tangible things," says Burton. "We need to look at those elusive pieces and the broader interpretation of sustainability. Rethinking more in terms of education and sustainability and what more we can do not just as staff but also for our students and the greater community."

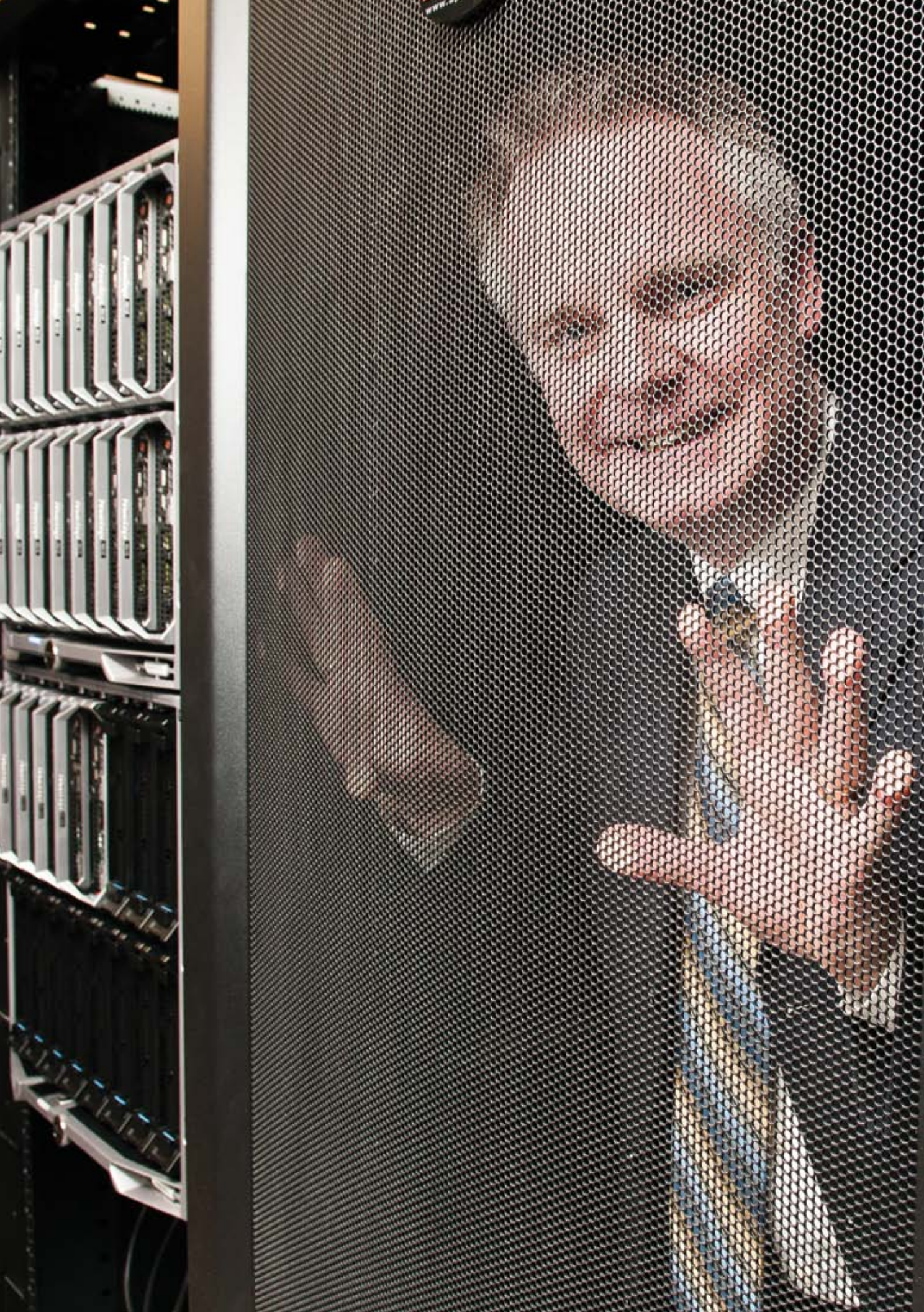
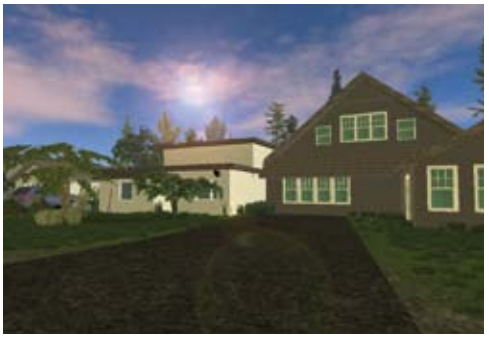


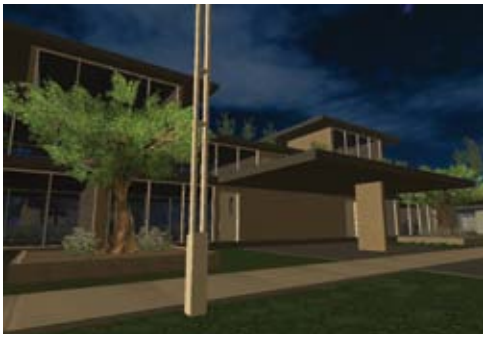
PHOTO: MARLENE GRAHAM

THE FUTURE AT YOUR FINGERTIPS

"If we are to really make a difference, we need to look at how we communicate the message of climate change. We need to engage people in a way that is meaningful and can motivate them to take action."

Left to right: Amber Choo, Aleksandra Dulic, Maggie Shirley





Screen shots of game

Imagine if you could see your neighbourhood a century from now. What would it look like? Students from both UBC's Okanagan campus and Vancouver, along with their professor, have developed an interactive program that virtually demonstrates the impact of future climate change on a community.

"Climate change is a global phenomenon but the effects felt are much closer to home. Future Delta is an interactive 3D game that simulates the actual impacts of rising sea levels due to climate change," says Aleksandra Dulic, Assistant Professor for the Department of Creative Studies. "The game allows people to try different scenarios and see how they would help to mitigate flood damage or find ways to adapt."

Using the flood-prone neighbourhood of Beach Grove Road in Delta, BC as the model, detailed animation walks the viewer through different scenarios. Based on regional climate modeling, scientific advice and local stakeholder involvement, the game shows users how their choices could impact their environment. Players can select a range of options, such as adding wind turbines to decrease greenhouse gases, and then click to see how this may help reduce flooding levels 20 years from now.

Dulic says research shows us that if people see a virtual environment that models where they live, they will have more emotional attachment and ultimately, more motivation to change their behaviours in the real world after seeing the possible dangers to their own community.

"We can use Future Delta to help local governments and policy makers visually explore the future based on what actions we take today," she adds. "The chance to actually see the outcomes is a really positive and meaningful way to communicate about climate change and how we can make a difference."

Students across three different areas – fine arts, environmental science and computer programming – are collaborating on Future Delta. The interdisciplinary team includes undergraduate and graduate students, researchers and faculty and even an outside architect.

An architect was brought on board as part of the team to help find a design solution for adapting to flooding due to climate change. As a result, Future Delta allows viewers to select an option to build "floating homes" that will accommodate variations in high water levels.

"The experience gained from working on this project is very beneficial for everyone involved, especially in terms of career preparation. We're working on a common goal, bringing together many different skill sets and perspectives," says Dulic.

"I think the fact that this is an interdisciplinary project was really one of the highlights. It provides the training that is more difficult to do in the classroom," she adds.

The project may be specific to the community of Delta, but the idea and technology can be applied to anywhere in the world and can help municipalities better plan and build communities to adapt to climate change threats. Dulic is also looking at creating a 3D game simulation for the Okanagan region, an area prone to drought.

BUILDING A CAMPUS IS LIKE BUILDING A COMMUNITY

To responsibly steward the rapid growth and development of our community, UBC's Okanagan campus has placed sustainability at the core of all its planning processes and strategic directions. To date, the campus has grown by 54 percent since 2007 and will triple its size from 0.5 million square feet to 1.5 million square feet by the end of the campus build-out in 2012.

While such rapid growth has increased absolute building carbon emissions from 2,185.63 tonnes to 2,725.76 tonnes, greater efficiencies are being achieved. With a 54 percent increase in square metres from 2007-2010, the total carbon emissions per square metre has been reduced by 19.1 percent over 2007 values. Increased efficiency is largely due to the energy efficient design and operation of all new academic buildings and residences on campus, and reductions in natural gas consumption as a result of geothermal heating and cooling which commenced in 2006. The campus has also received a number of awards as a testament to its smart, integrated sustainable building design, including first place for Most Sustainable Development in the City of Kelowna's Mayor's Environmental Awards for 2010.

From geothermal heating and cooling systems to green roofs, UBC's Okanagan campus is leading the way in sustainable development. For example, all new academic buildings are built to LEED Gold Standards (Leadership in Energy and Environmental Design), a set of internationally recognized criteria for green building construction.

Student residences are also being built to new award-winning standards. The Residential Environmental Assessment Program (REAP) is UBC's own solution to building green. The objective of REAP is to encourage construction of family housing projects that are of a higher quality than those built using standard industry practices. It is similar to the LEED building rating system, but better reflects UBC's hands-on commitment to sustainability.

On the horizon, both the Engineering, Management and Education and Health Sciences Centre, due to open in 2011, are shining examples of building to LEED Gold standard. These two projects will boast the first green roofs on campus, helping to keep the buildings cool in the summer and warm in the winter, as well as absorbing rain water and improving air quality.

GREEN GLOBES ECO-RATING PROGRAM

The Program's graduated rating system, from one to five Green Globes, recognizes buildings that improve energy and environmental performance for management, site, energy, water, resources, emissions and indoor environment. UBC's Okanagan campus Arts and Sciences expansion is rated at five Globes, the highest eco-rating level, serving as a national or world leader in energy and environmental performance, and using design practices that can be implemented by others.

2010 MAJOR "GREENSTRUCTION" PROJECT HIGHLIGHTS

ARTS AND SCIENCES II ACADEMIC BUILDING: OPENED IN SEPTEMBER 2010

- Awarded five Green Globes - the highest achievement for environmental and energy performance
- Energy savings 40 percent better than Model National Energy Code of Canada for Buildings (MNECB), based on FortisBC Incentive Program calculations
- Anticipated 47 percent savings in water use through low-flow fixtures, water efficient landscaping and the use of bio-swales along the west side of the building

CASSIAR STUDENT RESIDENCE: OPENED IN SEPTEMBER 2010

- Occupancy sensors turn down heat and lights automatically when rooms are unoccupied
- High performance envelope including insulation, window placement and solar tint glass
- High efficiency furnaces, water and lighting fixtures
- Stormwater drained to a retention pond, reducing discharge to sewer system
- Majority of construction materials locally sourced and waste is recycled

PURCELL STUDENT RESIDENCE: COMPLETION IN 2011

- Includes similar energy-saving features to Cassiar, plus a number of newer features
- Received FortisBC PowerSense award of $58,000 for energy efficiency measures in design and construction
- Connected to its own closed loop geo-exchange heating and cooling system which is anticipated to result in an annual energy savings of about 49 percent, as compared to a similar standard building
- Going for Gold level in UBC's REAP green building program

SUSTAINABILITY AT UBC'S OKANAGAN CAMPUS

The Okanagan Sustainability Office has helped foster a wide range of sustainability initiatives throughout the campus and in the community, just some of which are featured in this year's edition of *Shift*. Aside from its regulatory role in Provincial greenhouse gas emissions reporting, the Office is actively working with faculty, staff, students and in the community to bring people, ideas and resources together to advance and facilitate sustainability from here.

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ACKNOWLEDGEMENTS

Thank you to the dedicated faculty, students, staff and community partners who contributed to this year's *Shift* magazine, our annual sustainability publication. We are honoured to share and celebrate your success stories on our collective journey towards sustainability. We also wish to extend a special thank you to Kelowna's Mayor Sharon Shepherd for her support.

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