



# **ANNUAL SUSTAINABILITY REPORT**

## **2016-2017**

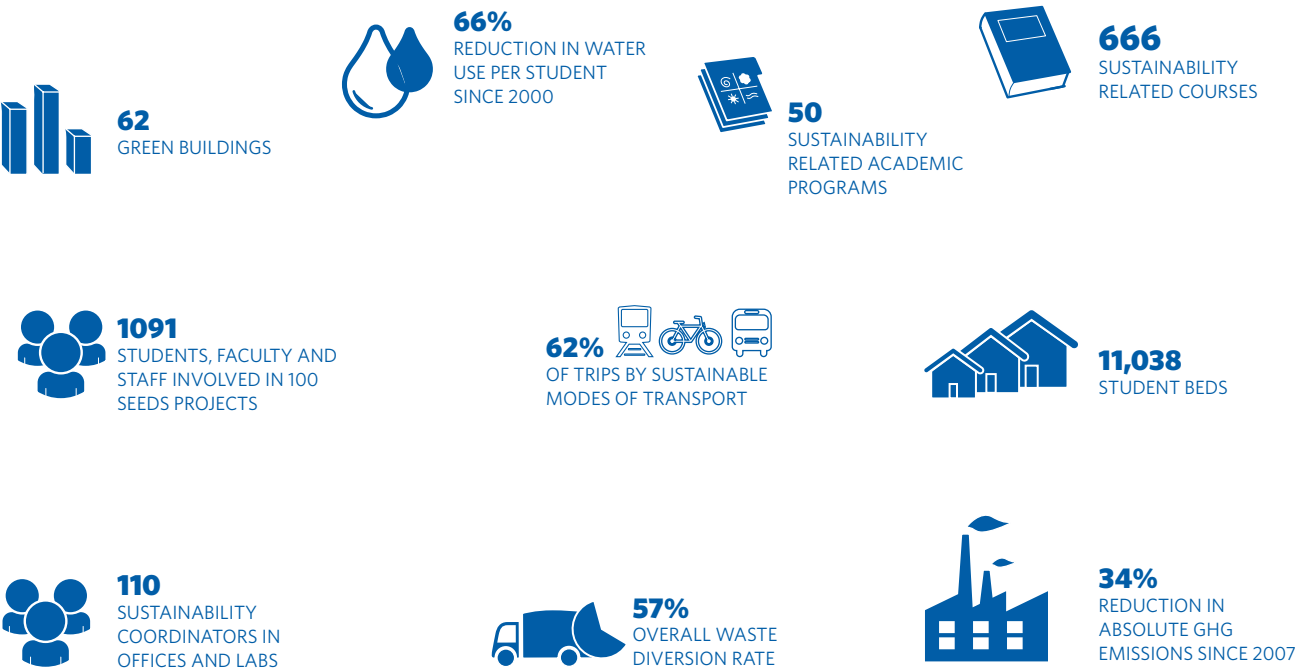


THE UNIVERSITY OF BRITISH COLUMBIA

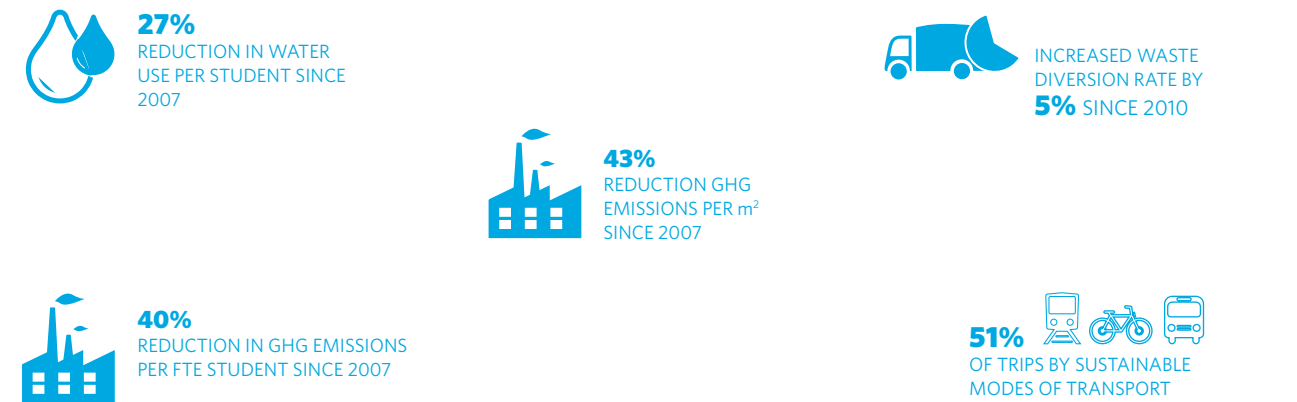
sustainability



# 2016/17 FAST FACTS



## VANCOUVER CAMPUS OKANAGAN CAMPUS



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## ABOUT UBC

The University of British Columbia (UBC) is a global centre for research and teaching, consistently ranked among the top 40 universities in the world.

Our two main campuses — the Vancouver campus and the Okanagan campus — attract and educate nearly 63,000 students from 162 countries and employ over 15,600 staff and faculty.

UBC's Vancouver campus is home to a vibrant, sustainable residential community where some 25,000 students, faculty, staff and other residents live, work and learn together. UBC's Okanagan campus, which has nearly doubled in size since 2007, is home to 1,700 students.

UBC recognizes that the UBC Point Grey campus is situated on the traditional, ancestral, and unceded territory of the Musqueam people and that the Okanagan campus is situated on the territory of the Syilx Okanagan Nation.

# 1990

1990

Tailloires declaration signed. Globally commits to sustainability.

1996

C.K. Choi Building opens, setting new green building benchmarks worldwide.

Dr. William Rees and graduate student Mathis Wackernagel develop ecological footprint concept.

1997

**\*Sustainable Development Policy adopted.**

1998

**\*Campus Sustainability Office opened.**

# 2000

2001

ECOTREK (2001-2008), the largest energy and water retrofit program at a Canadian university launched.

2003

U-Pass program pioneered, quadrupling transit ridership since 1997.

2006

**\*Comprehensive campus-wide sustainability strategy published.**

2007

Kyoto Protocol greenhouse gas (GHG) reduction targets met 5 years early.

Dr. John Robinson shares Nobel Peace Prize as one of lead authors of the Intergovernmental Panel for Climate Change report.

2009

Sustainability Academic Strategy developed.

Sustainability integrated as a core pillar of UBC's strategic plan.

# 2010

2010

**\*Bold targets set to reduce GHG emissions. Invests to meet climate change goals.**

Okanagan Sustainability Office established.

UBC Sustainability Initiative (USI) established to integrate operational and academic sustainability.

2011

**\*Gold rating in STARS, a university sustainability rating system, earned.**

**\*Designation as Fair Trade Campus earned.**

2014

**\*20-year Sustainability Strategy to advance regenerative sustainability developed.**

2015

MOU with Metro Vancouver signed.

Second Gold rating in STARS earned.

2016

34 per cent reduction in GHG emissions from 2007 levels achieved at Vancouver campus.

33 per cent reduction in GHG emissions from 2013 levels achieved at Okanagan campus.



SUSTAINABILITY  
**RECOGNITION**



GLOBAL  
**NETWORKS**



Photo credit:  
UBC Communications and Marketing



# CREATING THE WORLD WE WANT TO LIVE IN

At UBC, sustainability is a core pillar of our commitment to excellence that manifests in our scholarly and operational efforts throughout both campuses. Innovative research, our ecologically attuned campus facilities, and our leading role in sustainability education for tomorrow's key decision-makers demonstrates our commitment to sustainability. Indeed, UBC's international reputation for sustainability leadership reflects our long standing contributions.

As a leading research university, we are ideally positioned to champion discovery and innovation toward creating a better future. Every day, UBC students, faculty, and staff bring their expertise and passion to advance a sustainability-focussed body of knowledge and generate fresh ways to catalyze positive change.

Using the UBC campus as a living laboratory enables us to study, test and explore the challenges faced by cities, which in turn supports an innovation agenda that will help shape the communities and cities of the future.

The 2016/2017 fiscal year was a productive one for UBC. Faculty members continued to expand the sustainability-focussed body of knowledge on a number of significant issues.

These include an examination of the effect of global warming on fisheries, and development of smart road technology that resists heavy rains, intense heat and poor drainage. Other research advanced our understanding of clean energy and transportation futures in British Columbia.

Driven by the need to manage costs and to mitigate climate change, our operational efforts continued to focus on investing in efficient energy generation and distribution, and reducing campus energy consumption by tuning up existing buildings, developing high

performance buildings, and exploring low-carbon and renewable energy sources.

Thanks to these efforts, and despite a 19 per cent growth in building floor space and a 26 per cent increase in student population, UBC made its most significant achievement yet.

We reduced Vancouver campus greenhouse gas (GHG) emissions by 34 per cent relative to 2007 levels enabling us to meet our Climate Action Plan reduction target of 33 per cent.

Building efficiency projects have generated \$2.0M in on-going savings. UBC's investment into these projects has been limited to \$2.6M. The total project cost is \$6.8M with the difference being leveraged from incentives and other external funding opportunities.

At UBC Okanagan, the campus achieved a 40 per cent reduction in GHG emissions per FTE student since 2007 despite a 94 per cent increase in building floor space and an 86 per cent increase in student enrollment.

As a growing campus community, we aim to create a vibrant, complete, sustainable community at an urban neighbourhood scale. Linked to this aspiration we are delivering programming that advances inclusion and connectivity, health and wellbeing, and arts and culture.

With a history of over 20 years of achievement, our focus on sustainability has played a fundamental role in our pursuit of excellence across teaching, learning, research, operations, campus infrastructure, community development, and engagement.

Moving forward, UBC will continue to explore, innovate, and collaborate with partners as we strive to create the most sustainable university in the world and inspire sustainable urban transformation globally.



Dr. James Tansey  
Executive Director  
UBC Sustainability Initiative



Michael White  
Associate Vice-President  
Campus and Community Planning



Rob Einarson  
Associate Vice-President  
Finance & Operations, UBC  
Okanagan

# INTRODUCTION

The report helps UBC track, evaluate and manage its performance in line with established policy goals and targets that are defined in the University's strategic Plan, 20-year Sustainability Strategy and supporting action plans. It also provides an opportunity to highlight and share UBC's sustainability achievements broadly.

UBC has committed to assume a leadership role through practicing sustainability development and instilling sustainable values in its students, graduates and employees through research, teaching and operations. The 2016/2017 Annual Sustainability Report fulfills the sustainability reporting requirement outlined in UBC's Sustainable Development Policy #5.

Our approach to leadership in sustainability is grounded in the integration of sustainability across teaching, learning, research, operations, campus infrastructure, and community.

Through partnerships with numerous external organizations we draw on the operational, educational and research capabilities available at UBC and explore sustainability in the living laboratory provided by our campuses. We then teach, apply and share the knowledge, technologies and policies that emerge from this work.

As an agent of change, we also leverage opportunities for collaboration and knowledge exchange, and together with the community learn how we can foster sustainability in the larger world.

The following is a summary of our key achievements.



# TEACHING, LEARNING AND RESEARCH

Across the university, UBC faculty are teaching and studying sustainability through hundreds of courses, programs and projects, and creating diverse sustainability learning opportunities for our students. Our goal is for all undergraduate students to have access to sustainability learning alongside their chosen degree program, and we provide focused support to faculty members who are working to develop these curriculum pathways. Beyond the classroom, we help our students access a myriad of opportunities to get involved in sustainability.

## OUR ACTIVITIES

### SUSTAINABILITY LEARNING PATHWAYS

We support faculty to develop and revise curriculum so that all students will have the option to incorporate sustainability into their undergraduate academic experience.

### FOSTERING STUDENT INVOLVEMENT

Through programs such as paid sustainability internships, on-campus experiential learning projects, student engagement, and advising services, we are enabling undergraduate and graduate students to address critical societal needs and impact change.

### FACILITATING COLLABORATION

We gather information from across campus on courses, research, initiatives and other involvement opportunities related to sustainability and share these on our comprehensive website and through in-person engagement activities.

# 50

**SUSTAINABILITY RELATED  
ACADEMIC PROGRAMS**

# 666

**SUSTAINABILITY  
RELATED COURSES**

# 423

**FACULTY ENGAGED IN  
SUSTAINABILITY RESEARCH**



# FACULTY ENGAGEMENT

The UBC Sustainability Initiative (USI) works to engage UBC’s academic community in sustainability activities. The following are highlights from the 2016/2017 Teaching, Learning and Research activities:

ACTIVITIES	DESCRIPTION	ACCOMPLISHMENTS
SUSTAINABILITY LEARNING PATHWAYS	Support faculties and departments in creating a suite of sustainability-oriented courses and experiences so that every undergraduate student at UBC can pursue a sustainability education.	<p>Second year Sustainability Learning Pathway grants (second of two years) were distributed to faculty members developing sustainability curriculum in the Faculty of Arts and in the Sauder School of Business.</p> <p>New Sustainability Learning Pathway grants (first of two years) were distributed to faculty members in Land and Food Systems and the Faculty of Education.</p>
ANNUAL COURSE CONSULTATION	Consult with UBC Vancouver faculty to identify sustainability courses and to identify faculty with sustainability research interests.	<p>Identified 666 sustainability-oriented courses across all faculties and 423 faculty members who are engaged in sustainability research.</p> <p>All UBC faculties now provide courses with sustainability content.</p>
FACULTY FELLOWSHIPS & LIAISONS	Enable faculty to contribute to the discussion to advance UBC’s academic sustainability goals.	<p>Through the Sustainability Fellows program, awarded four fellowships and supported regular, interdisciplinary discussions involving faculty members implementing sustainability curriculum changes in their courses and programs.</p> <p>Introduced new “Sustainability Liaison” program for faculty members, enabling continued cross-faculty communication around sustainability. Faculty members from Applied Science, Science and Arts participated in the Sustainability Fellows programming throughout the year.</p>

# STUDENT ENGAGEMENT

ACTIVITIES	DESCRIPTION	ACCOMPLISHMENTS
SUSTAINABILITY SCHOLARS PROGRAM	Provide UBC graduate students with applied work experience with sustainability partners both on and off campus.	<p>Engaged 46 graduate students in applied work experience with both on and off campus sustainability partners.</p> <p>Projects undertaken with 7 external partners and 3 on-campus departments.</p> <p>More than doubled the number of Sustainability Scholar projects available to students.</p> <p>Largest Greenest City Scholar cohort to date.</p>
SUSTAINABILITY ADVISING	Provide student advising on academic and co-curricular opportunities.	<p>Introduced sustainability content into programming designed for student leaders across campus.</p> <p>Built relationships with over 171 academic advisors and program managers and engaged over 48 student groups.</p>
SUSTAINABILITY AMBASSADORS PEER PROGRAM	Foster student leadership and promote sustainability education through peer-to-peer education.	<p>Organized and hosted the annual Sustainability Fair, engaging 31 organizations and an estimated 500 attendees.</p> <p>Developed and hosted the Renew your Resolutions Sustainability and Wellbeing event in collaboration with UBC Wellbeing, Food Services, and the Student Environment Centre to promote healthy and sustainable eating and living habits.</p> <p>Hosted a Sustainability Research and Career Symposium, profiling UBC sustainability researchers. Developed and hosted a panel on the Carbon Tax with over 80 participants and another on the Earth Charter Initiative which lead to the start of an Earth Charter Club at UBC.</p> <p>Offered sustainability consulting services to 18 student groups.</p>
UBC READS SUSTAINABILITY	Provide a forum for students across disciplines to discuss sustainability issues with globally recognized authors.	<p>Hosted two speakers on topics of food sustainability, indigenous storytelling, and climate change: Simran Sethi author of <i>Bread, Wine, Chocolate</i>; Roy Henry Vickers, author of <i>Peace Dancer</i>.</p> <p>Successfully partnered with other organizations on campus and raised over \$7,000 in sponsorships. Developed a Memorandum of Understanding with the Pacific Institute for Climate Solutions at UBC to bring high profile speakers to campus.</p> <p>Recorded lectures received over 450 views on YouTube.</p>
SUSTAINABILITY STUDENT COUNCIL	Provide feedback to specific projects, programs and initiatives related to sustainability at UBC.	<p>Brought together executive reps from 17 student led campus groups to create a diverse and interdisciplinary group.</p> <p>Council met three times per term to provide meaningful feedback to UBC staff on a wide range of projects.</p>



# UBC READS SUSTAINABILITY

World-renowned author Simran Sethi shares intimate stories of our foods and ways we can better save—and savour—they.

Simran was hosted by UBC Reads Sustainability, an educational speaker series that engages the wider community on issues that matter.

Will Valley, an instructor in the UBC Faculty of Land and Food Systems, facilitated a discussion with an

audience of over 100 community members interested in the future of our food systems.

The event was organized with support from the Liu Institute, the Faculty of Land and Food Systems, the Centre for Sustainable Food Systems at the UBC Farm, and the Pacific Institute for Climate Solutions. It was also part of the UBC Future of Food Global Dialogue Series.



Will Valley (left) in discussion with Simran Sethi (right).  
Photo credit: Edward Change

# SEEDS SUSTAINABILITY PROGRAM

The SEEDS Sustainability Program creates partnerships between students, faculty, staff and community organizations that result in innovative and impactful research projects that advance sustainability on campus and beyond. SEEDS supports UBC’s efforts to advance sustainability strategies and operational priorities by providing experiential learning opportunities through applied student research projects.

## FOSTERING CAMPUS-WIDE COLLABORATION

- Forged new strategic partnerships with the Faculty of Forestry, the School of Community and Regional Planning, and the School for Architecture and Landscape Architecture as a way to increase applied project opportunities and enhance operational and academic sustainability outcomes.
- Celebrated campus champions through two signature events: the annual UBC Sustainability Soirée, and the first ever Biodiversity Showcase, which provided faculty, staff and students with an opportunity to learn about 27 campus biodiversity projects.
- Advanced UBC’s sustainability objectives by facilitating applied research projects that informed 18 different plans and policies, including the Climate Action Plan, Wellbeing at UBC, the Green Building Plan and the Zero Waste Action Plan. Projects included assessing travel emissions and plant-based food options, developing maps to promote physical activity, and a number of interactive installations such as solar-powered rotating garden pods and bird-friendly window decals, waste sorting approaches and mug-share options.
- SEEDS received international recognition for its innovative approach to bridging academics and experience to promote and advance sustainability, from the International Sustainable Campus Network (ISCN), the United Nations Environment Programme (UNEP), and the Environmental Association for Universities and Colleges (EAUC).

**1091** STUDENTS, FACULTY, STAFF & COMMUNITY PARTNERS ENGAGED

**131** APPLIED RESEARCH PROJECTS MANAGED

**9** FACULTIES & SCHOOLS ENGAGED



## SEEDS BUILDING BIODIVERSITY PROJECT

Launched in 2016, the SEEDS Building Biodiversity Project aims to create a platform to inform the development of a Biodiversity Strategy for the UBC Vancouver campus. In its first year, a Biodiversity Steering Committee comprised of faculty, students, staff, residents, operational clients and community partners was formed. Thirty projects launched in six faculties and 12 departments, ranging from research on carbon sequestration of trees, to wildlife mapping, to exploring a green corridor on campus were featured at the first Biodiversity Showcase conference.

Long term goals include the creation of a platform to inform the development of a Biodiversity Strategy, and to have a campus that exemplifies engagement with an understanding of biodiversity.





SEEDS Sustainability Students.  
Photo credit: Paul Joseph, UBC Communications and Marketing

## STUDENTS RESEARCH CAMPUS FOOD RECOVERY AND DONATION PROGRAM

Two SEEDS Sustainability Program research projects led to the first ever food recovery and donation partnership between UBC Food Services and the AMS Food Bank.

UBC Food Services Culinary Director and Executive Chef, David Speight, and his team partnered with a Land and Food Systems (LFS) 450 class on a SEEDS project to increase the sustainability of the campus food system. They researched the logistical challenges of implementing a large-scale program, the demand for recovered food on-campus, and third-party partnerships for distributing food.

Students worked with UBC Food Services staff to recover edible food from Sage, the Point Grill, and four food services retail outlets. They then collaborated with a second LFS 450 student group doing a SEEDS project on expanding the AMS Food Bank Partnerships to identify a donation partnership structure.

These research projects led to UBC Food Services partnering with the AMS Food Bank to distribute the recovered food to students on campus in an ongoing basis.



Vincent Chiu  
Photo credit: Alex Midgal

## ENGAGING YOUTH AND FOSTERING SUSTAINABILITY

Vincent Chiu, a third-year student in the Department of Psychology and a 2016 UBC Sustainability Ambassador, shares how he is enhancing his education through sustainability courses and experiences.

### Q: Tell us a little bit about yourself.

I'm taking a major in psychology with a minor in health and society. Growing up in the Metro Vancouver region, I was able to engage in cosmopolitan issues and join in interdisciplinary discussions which shaped me into the person I am today. In my free time, I like to bike and actively engage youth in societal issues and encourage political collaboration by connecting ideas and youth with municipal and federal government representatives.

### Q: How did you first get involved in sustainability at UBC?

I have always had an interest in sustainability. In Grade 11, I remember going to a student leadership conference and attending an inspiring lecture led by Dr. John Robinson, UBC's former Associate Provost for Sustainability. John talked about

regenerative sustainability and the idea of shifting mindsets for a more sustainable world. Sustainability is a slow process, and one that requires a change in behaviour. This was a turning point for me, as I saw a natural link between sustainability and psychological behaviour, so I knew that majoring in psychology was a natural fit for me.

### Q: What are you up to outside of class?

I've been working at a centre that showcases sustainability innovation and technology from around the world. We advise urban planning and development initiatives on how to become more sustainable. I'm also working with a few other Sustainability Ambassadors on starting an Earth Charter Club at UBC with a focus on raising awareness and helping inform policies on sustainable development goals (SDGs), urban design and impact investing.



# SPOTLIGHT ON RESEARCH



## NEW SMART ROAD TECHNOLOGY CONNECTS RURAL COMMUNITIES

A rural village in India has a better connection to the world, thanks to an innovative UBC-developed road design that resists heavy rains, intense heat and poor drainage, according to UBC civil engineering professor Nemy Banthia, who led the project.

This pavement was an IC-IMPACTS demonstration project for a low-cost, long-lasting road that could be implemented in many rural or remote locations.

The road is one-third the thickness of a traditional road in India, has a 50 per cent smaller carbon footprint and is more sustainable. It costs less and is expected to last almost three times longer.

The road is built with ultra-high strength concrete reinforced with hydrophilic polyolefin fibres (also called HY5 fibres) with advanced nano-coatings.

Photo credit: UBC Public Affairs



## UNIVERSITIES ESTABLISH JOINT CENTRE TO USE DATA FOR SOCIAL GOOD IN CASCADIA REGION

In an expansion of regional cooperation, the University of British Columbia and the University of Washington announced the establishment of the Cascadia Urban Analytics Cooperative to use data to help cities and communities address challenges from traffic to homelessness.

The largest industry-funded research partnership between UBC and the UW, the collaborative will bring faculty, students and community stakeholders together to solve problems, and is made possible thanks to a \$1-million gift from Microsoft.

Photo credit: UBC Communications and Marketing



## UBC RESEARCHERS USE AUGMENTED REALITY TO TEACH KIDS ABOUT CLIMATE CHANGE

While Pokémon Go has helped to bring augmented reality to everyday life, UBC researchers are using similar technology to teach high school students about climate change.

Based on the community of Delta B.C., the Future Delta video game first lets players see a bleak future where little was done about climate change. Then, exploring challenges facing the Lower Mainland like floods, sea level rise, heat waves, fires, blackouts and our own energy choices, players take on the role of making a better future.

Beyond the Delta School District to youth audiences across Canada, UBC and the UW, the collaborative will bring faculty, students and community stakeholders together to solve problems, and is made possible thanks to a \$1-million gift from Microsoft.

Photo credit: Collaborative for Advanced Landscape Planning



## CLEAN ENERGY RESEARCH CENTRE FUELS RESEARCH INTO BC'S TRANSPORTATION FUTURES

Transportation needs in BC collectively yield the largest aggregate source of GHG emissions. This project aims to tackle that problem directly by identifying viable options for developing low-or-zero emission pathways for sustainable air, land and domestic marine transportation.

A key focus will be identifying the expansion potential for high-tech renewable energy use and generation within the transport sector, including electric trolleys, fleets, buses, rail, personal electric vehicles, hybrids and bikes and the optimal topologies for recharging and refuelling networks.

Other areas of inquiry include the potential for increased adoption of hydrogen and associated fuel cell technology and the distribution potential of alternative fuels including compressed (CNG), liquefied (LNG) and renewable (RNG) natural gas.

The research team will incorporate land use planning and urban design into the exploration of these modes and their potential deployment.



# OPERATIONS AND INFRASTRUCTURE

As a large, research-intensive university, with considerable land, assets and utilities, we are in the unique position to use our campuses as test beds for sustainability. We are working to enhance the efficiency of our operations, reduce our environmental impact, and achieve cost savings, while leveraging our campus infrastructure and the built environment to demonstrate innovative sustainability solutions at the municipal scale.

## ENERGY AND EMISSIONS

As a rapidly growing, research-intensive campus, UBC is finding innovative ways to reduce energy and emissions. We've achieved our ambitious 2015 greenhouse gas (GHG) reduction target and continue to update and implement our award-winning Climate Action Plan, advancing energy conservation and emissions reduction strategies across campus to achieve our sustainability goals while realizing cost savings. Building efficiency projects have generated \$2.0M in on-going savings. UBC's investment into these projects has been limited to \$2.6M. The total project cost is \$6.8M with the difference being leveraged from incentives and other external funding opportunities.

### ENHANCING EXISTING AND NEW BUILDINGS

- Shrunk the environmental footprint of UBC research through lower noise pollution and energy consumption in three buildings by safely tuning exhaust fan speeds. The successful project reduces annual energy by 3 million kWh which is equivalent to powering 250 homes.
- Began a multi-phase LED retrofit project across campus, replacing 28,000 lamps to date with efficient LED lights. The new LEDs provide improved lighting quality, use half as much energy, and last longer than conventional lights.
- Completed the second phase of our Building Tune-up program which has now re-commissioned over 40 buildings, saving well over 3 million kWh of electricity and 40,000 GJ of natural gas annually.
- Recovered 10,000GJ of wasted heat with Life Sciences' heat recovery chiller, reducing 500 tCO<sub>2</sub>e annually.

### CLIMATE ACTION PLAN UPDATE

- Developed a two-phase Climate Action Plan that identified 24 actions to advance toward the 2020 target. The second phase is underway with analysis of expanding the use of clean waste wood to reduce UBC's reliance on fossil fuels.

**48%**  
OF UBC'S TOTAL ENERGY  
CONSUMPTION IS FROM  
CLEAN AND RENEWABLE  
SOURCES

**34%**  
REDUCTION IN  
ABSOLUTE GHG  
EMISSIONS SINCE 2007

**TARGET: REDUCE VANCOUVER CAMPUS  
GHG EMISSIONS\***  
**33% BY 2015 - ACHIEVED**  
**67% BY 2020 - PLANNED**  
**100% BY 2050 - INSPIRE**

\*RELATIVE TO 2007 LEVELS



### UBC HITS TARGET DESPITE GROWTH

UBC's Vancouver campus now emits 34 per cent less GHG emissions than it did in 2007 despite a 19 per cent growth in building floor space and a 26 per cent increase in student enrollment. UBC achieved its aggressive GHG emission reduction target through the following 2010 Climate Action Plan projects:

- The Academic District Energy System steam to hot water conversion project connected over 100 buildings to a more efficient hot water energy system. The primary energy source for this is the Campus Energy Centre, which improves energy efficiency by over 24 per cent.
- Generating heat from clean waste wood, the Bioenergy Research and Demonstration Facility reduced campus emissions by 14 per cent from 2007 levels.
- Ongoing implementation of the Building Tune Up program reduced emissions by over 9 per cent from 2007 levels.



# CAMPUS ENGAGEMENT

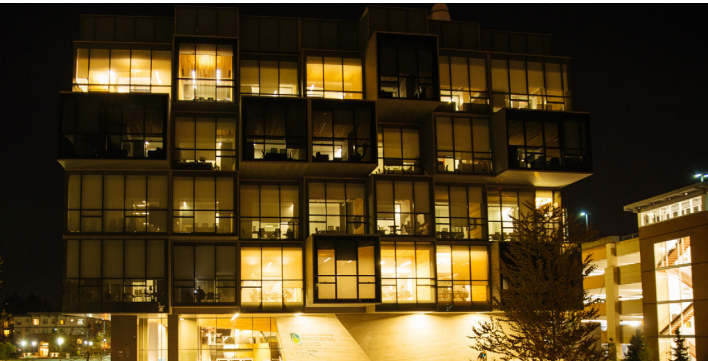
Our signature engagement programs enable students, staff, faculty and residents to positively contribute to UBC’s sustainability goals, exemplify sustainable behaviours and practices, and help achieve our ambitious sustainability plans.

70

SUSTAINABILITY  
COORDINATORS IN  
OFFICES

40

SUSTAINABILITY  
COORDINATORS IN LABS



### SEASONAL SHUTDOWN CAMPAIGN

Departments across campus joined together to reduce UBC’s environmental footprint over the December 2016 winter holiday.

Implementing a small series of energy saving measures across campus during the nine-day break resulted in significant savings. We reduced energy costs by \$20,500, energy consumption went down 356,900 kWh (the equivalent of running 4,350 refrigerators over the same period), and we reduced carbon emissions by 13 tonnes (equivalent to 10 round trip flights from Vancouver to Ottawa).

Overall, the campaign affected over 30 buildings and engaged 35 departments and 1,300 people.

### SUSTAINABILITY IN RESIDENCE

UBC’s Sustainability in Residence (SiR) program had a successful year of student leader engagement and capacity-building. Several Growth & Success Program seminars were conducted to highlight the opportunities for students around living more sustainable lifestyles, as well as reducing waste on campus. The program also supported bi-weekly workshops for student leaders to share their ideas, learn about UBC’s sustainability goals and targets, and to network among themselves. Operationally, the SiR program supported changes to default settings on washing machines to use cold water, which have significant natural gas savings potential.

### GREEN OFFICES

UBC’s Green Office and Sustainability Coordinator Program engaged a network of over 70 staff and faculty departmental sustainability champions to advance workplace sustainability initiatives. Highlight achievements include the launch of a new energy conservation campaign to promote energy savings during winter holidays, the launch of a new Sustainable Purchasing Guide to promote sustainable procurement options, the development of a new Lights Out campaign, and the delivery of interactive workshops and training. Hundreds of UBC employees also participated in Bike to Work Week, leading to UBC being recognized once again as a regional champion.

356,900 kWh

ELECTRICITY SAVED DURING SEASONAL  
SHUTDOWN

### GREEN LABS

UBC’s Green Labs Program minimizes the environmental impact of the research footprint by promoting innovative solutions that reduce energy, water, and solid and hazardous waste. In 2016, the Green Labs Program engaged hundreds of researchers through the delivery of quarterly events, educational tours and training opportunities, and through the Green Labs Fund, which supports enhancements to lab sustainability initiatives.

The Sustainability Coordinator program in Labs now has 40 volunteer Coordinators who promote sustainable practices in 25 research departments across campus. This year, themes addressed included solid waste management, air quality, wastewater pollution prevention and energy conservation.

### CHILL UP CHALLENGE

Many valuable scientific research samples are stored in ultra-low temperature (ULT) freezers, each of which consumes as much energy as a single family home. With approximately 1000 ULTs on campus, cold storage continues to be a major target for Green Labs energy conservation efforts.

Building on past pilot studies, this year’s Chill Up Challenge encouraged researchers to adjust the temperature of ULT freezers. An increase of 10°C reduces equipment energy consumption by 20 per cent on average. This action is safe for many research sample types, increases freezer lifespans and contributes to equipment cost savings and waste reduction.

An impressive 58% of Michael Smith Laboratory researchers now have freezers set to the energy saving temperature. The department is saving 38,000kWh of electricity each year, equivalent to the consumption of 100 home chest freezers.

### DID YOU KNOW?

Laboratories use 10 times more energy than other types of spaces on campus.







# INNOVATIVE SOFTWARE CONVERTS WI-FI DATA INTO ENERGY SAVINGS

For the first time in Canada, a University of British Columbia engineer has found a way to use Wi-Fi to determine the number of building occupants and adjust ventilation accordingly—saving energy without sacrificing air quality.

“Every day, thousands of smartphones, laptops and tablets connect to the Wi-Fi network at UBC,” said Stefan Storey, who holds a master’s in mechanical engineering and a PhD in resource management and environmental studies from UBC.

“Our Bridge software anonymously counts the number of wireless devices in each room and passes the counts on to UBC’s building control system, which then adjusts airflow through the relevant building, practically in real time.”

UBC worked with Storey to test the technology at the Irving K. Barber Learning Centre library, which serves thousands of students and staff.

They found that it reduced energy consumption by five per cent over a period of 12 months, while maintaining air quality and occupant comfort.

David Woodson, UBC’s Managing Director of Energy and Water Services, says the new system could help the university reduce greenhouse gas emissions by hundreds of tonnes and save as much as \$100,000 in energy costs per year for core campus buildings.

UBC is installing the technology in 10 more buildings over the next several months. This project received financial support from UBC’s Sustainability Revolving Fund, which funds innovative energy-saving projects.



# UBC WINS INNOVATION AWARD FOR DISTRICT ENERGY SYSTEM

UBC won the International District Energy Association (IDEA) Award for Innovation for the Bio-energy Research and Demonstration Facility (BRDF). David Woodson, Managing Director of Energy and Water Services, explains what made the BRDF stand out and how it helps UBC advance its sustainability goals while supporting teaching, learning and research.

## WHAT IS THE BRDF AND WHAT MAKES IT STAND OUT?

Using renewable fuels, the BRDF produces steam, electricity, and hot water that is then distributed for use in campus buildings. In combination with the Campus Energy Centre, our primary energy source, it makes up UBC’s district energy system.

By using biomass (clean wood waste), the BRDF helps UBC reduce greenhouse gas (GHG) emissions by replacing conventional fuels such as natural gas and fuel oil with a renewable fuel.

What’s unique about the BRDF is that it was the first project of this scale in North America capable of generating both clean heat and power using biomass, a plant-based, renewable energy alternative to fossil fuels.

In 2016, the BRDF completed its fourth year of operation. It generates heat from renewable biomass and electricity from Renewable Natural Gas (RNG) and provides energy for 20 per cent of the total campus steam production, which has led to significant reductions in natural gas use on campus and a reduction in overall campus GHG emissions by 11 per cent compared to 2007 levels.

The facility is a physical manifestation of the Campus as a Living Laboratory concept as it integrates UBC’s core academic mandate (research and teaching) with the university’s operational and infrastructure requirements. Establishing research laboratory space inside an operational facility is a unique concept that has garnered significant positive attention from our peers. We’ve had 11 spin-off research and development projects that engaged 14 UBC faculty and a larger number of students.





# SOCIAL AND ENVIRONMENTAL SUSTAINABILITY IN ACTION

## Brock Commons Tallwood House, UBC's first hybrid mass-timber structure

Over the last few decades there has been a renaissance in the use of wood, specifically mass-timber construction, driven by innovations in new engineered wood products, design tools and construction practices. UBC is a leader in wood construction practices not only through academic research, but also in the use of engineered wood products for our academic, utility, athletic and residential buildings. The newest addition to the campus portfolio is the Brock Commons Tallwood House—an 18-storey student residence with a hybrid mass-timber structure.

Brock Commons was the first in North America to use mass-timber products in a residential high-rise, and is the tallest contemporary wood building in the world (for now). It is composed of prefabricated cross-laminated timber (CLT) panel floor assemblies supported on glue-laminated timber (GLT) and parallel strand lumber (PSL) columns with steel connections, and a steel roof deck.

During the summer of 2016, the mass-timber structure was assembled on site. Using innovative virtual design and construction modelling to assist with the construction planning and techniques (such as prefabrication and just-in-time delivery) the wood structure was assembled in record time. Each wood element was precut to the appropriate size so the entire structure fit together like a kit of parts. On average, crews assembled two floors per week, and completed the entire structure in 9.5 weeks.

Brock Commons also offers an important space for research and education. An ongoing research project has been studying the design and construction of the building. An education and outreach centre, established by USI-CIRS, provided an opportunity for visitors to learn about this innovative project. Over the course of the year, over 1300 visitors from over 12 countries came to learn about Brock Commons. This included students, researchers and educators, design professionals, representatives from the construction and forestry industries, and government officials.



Brock Commons Tallwood House  
Photo credit: naturally:wood

# GREEN BUILDINGS

Buildings are the largest contributor to UBC's environmental footprint and in recognition of this we are developing UBC's first Green Building Plan to create a clear pathway forward. Building on a history of leadership in green building, the University's vision for the plan is to create a strategy for developing buildings that contribute to a net-positive campus that promotes human and ecological wellbeing.

TARGET: ALL NEW CONSTRUCTION AND MAJOR RENOVATIONS MUST ACHIEVE LEED OR REAP GOLD.



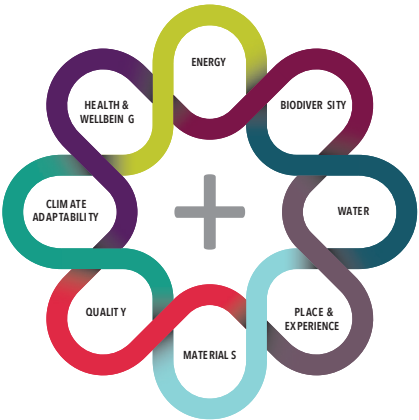
## UBC GREEN BUILDING PLAN

Creating a plan to advance UBC toward Regenerative Communities, the Green Building Plan will guide sustainable development of academic and residential neighbourhood building projects on the Vancouver Campus. The vision for the plan is to create a pathway for developing buildings that contribute to a net-positive campus that promotes human and ecological wellbeing. The Plan will address building design in eight areas:

- Energy
- Biodiversity
- Water
- Place & Experience
- Materials & Resources
- Quality
- Climate Adaptability
- Health and Wellbeing

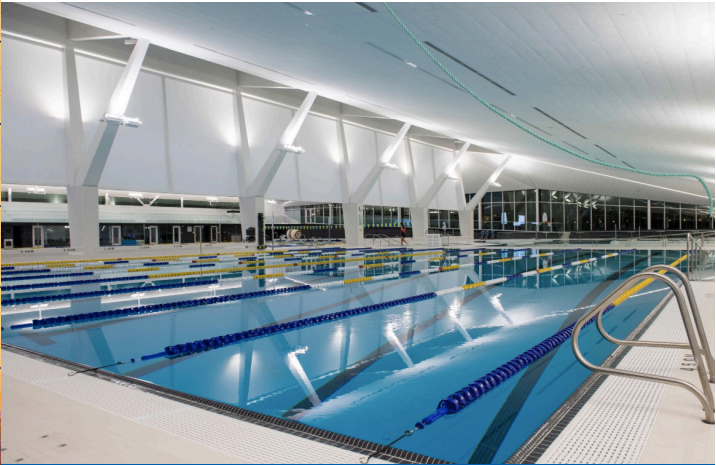
These areas are interconnected and work in synergy while also providing co-benefits across the components. For example, trees planted near a building can provide shade for the building as well as creating a sense of wellbeing for people and increasing habitat for birds.

In late 2016, we undertook preliminary interviews with key stakeholders to reflect on and learn from past projects and the existing development process. Workshops were held with a large group of stakeholders, experts, and faculty to gather ideas in January 2017. These successful events generated a great many thoughtful ideas and created valuable input for the plan.



## UBC AQUATIC CENTRE

THE UBC Aquatic Centre, which opened in 2017, provides a state of the art aquatic facility with significant sustainability features. Rainwater is collected in an underground cistern and is used to top up the pool and provide water for toilets and irrigation. The pool, which is heated by District Energy and employs heat recovery is one of the only pools in Canada that is designed to harvest rainwater as an alternative to using only potable water. In addition, changing rooms promote use by diverse groups and maximize visibility and security.





# MATERIALS AND WASTE

As part of UBC’s Zero Waste Action Plan, 2016 marked the first full year of operation of the large fleet of indoor multi-stream recycling stations. Programming is now placing greater emphasis on the student housing and food service sectors, continued reduction in construction waste, and ensuring that new buildings include recycling infrastructure to enable a zero-waste future.

## BUILDING CAPACITY

- Completed and launched the new online Sustainable Purchasing Guide.
- Released new UBC Food Service Ware Procurement Guidelines to help maximize the diversion potential of single use food packaging on campus.
- Facilitated the establishment of a Zero Waste Squad, a peer-led volunteer program for UBC students.
- Demonstrated another major Zero Waste event at the 2016 Staff Barbeque, which generated virtually no garbage.

## REDUCING CONSTRUCTION WASTE

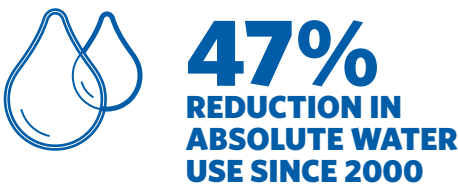
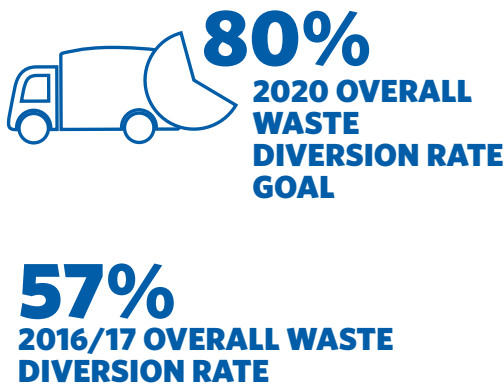
- As construction, demolition and operational waste diversion rates remained similar in 2016/17 to the previous year, ongoing efforts focus on improving the effectiveness and performance monitoring of the zero-waste program.

## REDUCING WASTE THROUGH RESEARCH

- Completed SEEDS research projects on design of innovative recycling station signage, reuse of surplus furniture, and food waste recovery.

## EVERYONE CAN PLAY A PART

Help us convert food waste into compost for landscaping by sorting food scraps into green bins, and keeping plastic out!



### ZERO WASTE RESEARCH AT THE APPLE FESTIVAL

The annual Apple Festival at the UBC Botanical Garden is a popular two-day event that hosts up to 18,000 people. With food vendors and apple related products for sale, the event creates hundreds of kilograms of waste which attendees struggle to properly sort.

An interdisciplinary research team set out to investigate the best options such as bin layouts, innovative signage, and volunteers to improve sorting and recycling rates. The research results showed that volunteers made all the difference: bins with trained volunteers had the lowest number of contaminants.

### WATER CONSERVATION BRINGS ADDITIONAL BENEFITS

In 2016-2017, UBC’s Energy and Water Services executed a project to modernize laboratory process cooling infrastructure in the Brimacombe building from open-loop water cooling to a closed-loop heat recovery system.

The project was integrated with the Quantum Matter Institute and enables the capture of waste heat for re-use in other parts of the building, while eliminating the need for domestic cold water to provide cooling. It is expected to save 40 million litres of water and reduce greenhouse gas emissions by over 340 tonnes each year.

# WATER

Despite growth in floor space and population, UBC continues to decrease its reliance on the regional water supply by reducing consumption. In addition, the use of progressive rainwater management techniques is being extended to include new buildings and neighbourhoods in the Vancouver and Okanagan Campuses.

## DISTRICT LEVEL WATER CONSERVATION

- Substantially completed the Academic District Energy System steam to hot water conversion project, which has saved over 136 million litres of water that was previously required to make up for condensate losses in the steam distribution system. The newly installed hot water system is a closed loop with leak detection systems to prevent water losses.

## RAINWATER MANAGEMENT

- Continued implementation of the Integrated Stormwater Management Plan and integration of on-site rainwater management for new buildings such as Orchard Commons.

## ENHANCING EXISTING AND NEW BUILDINGS

- Continued to audit existing buildings for water conservation opportunities and implement retrofits such as updating old urinals, which is expected to save over 100 million litres per year in water consumption.

## PLANNING FOR THE FUTURE

- UBC continues to develop a Water Action Plan to map out future goals, targets and actions around managing water more sustainably.

## DID YOU KNOW?

Despite the amount of rain that falls in the greater Vancouver area, long summer dry periods can draw down water reservoirs, requiring water restrictions to be activated in the region that impact all water users.



# UBC OKANAGAN

## 2050 WHOLE SYSTEMS PERFORMANCE GOALS

**UBC Okanagan continues to demonstrate its commitment to the advancement of campus sustainability and the BC Provincial Government's carbon neutral mandate by integrating sustainability into fundamental planning and infrastructure frameworks integral to supporting the future growth and infrastructure development of the campus.**

Establishing and implementing the Board of Governors endorsed Okanagan Campus Plan (2015) and the senior executive endorsed UBC Okanagan Whole Systems Infrastructure Plan (WSIP, 2016) will guide UBC Okanagan through sustainable development over the next 20 years and beyond. Developed in parallel to and in support of the Campus Plan, the Whole Systems Infrastructure Plan (WSIP) views the entire campus as an integrated set of systems.

The objectives of the WSIP are wide reaching—from mitigating future climate change risks by reducing energy and carbon emissions, to reducing operational and maintenance costs and limiting our exposure to future price volatility, to supporting technological innovation, and creating an opportunity for research and development. In doing so, the WSIP will contribute to the wellbeing of students, faculty and staff, improve productivity and performance; and make the campus a highly desirable place to learn, work and live.

In addition, the Whole Systems Infrastructure Plan establishes key performance goals, and outlines an implementation plan to address energy, carbon, water, waste, biodiversity and engagement at the Okanagan campus.



**GOAL #1** ACHIEVE A NET-POSITIVE PERFORMANCE IN OPERATIONAL ENERGY AND CARBON



**GOAL #4** ENHANCE AND/OR RESTORE THE SITE'S ECOLOGY



**GOAL #2** IMPLEMENT A FRAMEWORK THAT SUPPORTS LOW EMBODIED CARBON IN FUTURE DEVELOPMENT



**GOAL #5** 100% DIVERSION OF RAINWATER FROM MUNICIPAL SYSTEMS



**GOAL #3** OPTIMIZE WATER QUALITY, SUPPLY AND SECURITY



**GOAL #6** STRIVE TOWARDS FULL WASTE RECOVERY/REUSE



# ENERGY AND EMISSIONS

Rapid growth and development of UBC’s Okanagan campus has occurred in parallel with the establishment of greenhouse gas (GHG) reduction targets set by the Province of British Columbia. In response, UBC Okanagan continues to strive to achieve sustainable energy performance from buildings—the primary source of the campus’ energy consumption and emissions portfolio—leading to the development of emission reduction strategies and the implementation of innovative building infrastructure and occupant engagement programs across campus.

## REDUCING ENERGY DEMAND

- Achieved an absolute reduction in carbon emissions for a third consecutive year.
- Continued to focus on the implementation of demand-side energy reduction projects, ongoing infrastructure performance improvements, and participated in energy conservation activities.
- Established and received executive endorsement of the Whole Systems Infrastructure Plan (WSIP, 2016). An implementation framework developed in parallel with and in support of the Okanagan Campus Plan (2015), the WSIP provides a long-term roadmap and five year implementation plan for future infrastructure needs and environmental stewardship for sustainable campus growth, community well-being and ecological resilience.
- Developed a dedicated Energy Team to support the implementation of the Strategic Energy Management Plan.
- Adapted UBC Technical Guidelines for Okanagan campus.
- Established an MOU between UBC Okanagan and FortisBC for Partners in Energy Efficiency.

## IMPROVING BUILDING PERFORMANCE

- Completed final Building Optimization Program (BOP) projects in Administration and Science buildings, yielding one per cent electrical savings and combined gas and medium temperature district energy system savings of 22 per cent, exceeding initial targets.

**33%**  
REDUCTION  
IN ABSOLUTE  
GHG EMISSIONS  
SINCE 2013

**40%**  
REDUCTION GHG  
EMISSIONS PER  
STUDENT FTE  
SINCE 2007

## 2050 WHOLE SYSTEMS PERFORMANCE GOALS

- #1 ACHIEVE A NET-POSITIVE PERFORMANCE IN OPERATIONAL ENERGY AND CARBON
- #2 IMPLEMENT A FRAMEWORK THAT SUPPORTS LOW EMBODIED CARBON IN FUTURE DEVELOPMENT



## WI-FI TECHNOLOGY = CARBON EMISSION REDUCTION

At the Okanagan campus, Wi-Fi technology is being used as more than a way to connect to mainstream media; it is being used to monitor building occupancy levels. This technology, conceived by a UBC PhD student and initially developed at UBC’s Vancouver Campus (see page 22 for full story), uses a monitoring system connected to the campus wireless network to collect and transmit data to the campus building management system (BMS). Based on the energy team’s technical programming, adjustments are made to the building’s environmental systems thereby accommodating current occupancy requirements by increasing or decreasing the utilization of the heating, cooling and air ventilation (HVAC) systems.

# CAMPUS ENGAGEMENT

Our engagement programs enable students, staff, faculty and residents to positively contribute to the achievement of UBC Okanagan’s sustainability goals, implement sustainable practices and exemplify behaviours on campus, and help to achieve successful implementation of UBC’s ambitious sustainability plans.

## ENGAGEMENT AT WORK

In response to the Power of You energy and carbon reduction campaigns, a key operations department continued to facilitate a staff-led audit that resulted in more than 3,700 lights and 67 projectors being turned off or powered down and almost 1,000 windows closed at night. These efforts contribute to the campus’ annual energy and carbon emission reduction.

## ENGAGEMENT IN THE CLASSROOM

Laboratories are making environmentally responsible changes in material and resource consumption. Green Labs Funding, awarded to a Biology PhD student, enabled a biology lab to reduce its environmental footprint, thus supporting the advancement of the campus’ long-term goals. The purchase of Lab Armor Beads™ to replace water in traditional water baths is estimated to reduce the lab’s overall waste generation and conserve approximately 1,092 liters of water and 138 kWh of electricity annually.

## ENGAGEMENT ACROSS CAMPUS

Open houses and individual research events provided key planning departments the opportunity to engage with campus constituents to collect feedback that was used to inform the development of strategies integral to supporting the implementation of the Campus Plan and Whole System Infrastructure Plan (WSIP). These events included the Academy Way Redevelopment, the Integrated Rainwater Management Plan, and the Three-Year Campus-Wide Conservation Action and Awareness Strategy.

The Power of You Program continued to engage staff, faculty and students through a variety of initiatives. Targeting waste, the “It only takes 1 or 2” campaign was deployed in the fall of 2016 and focused on the reduction of hand towels used by campus constituents at the source (e.g., kitchens and restrooms).

## ENGAGEMENT ACROSS HIGHER LEARNING

UBC Okanagan hosted and co-facilitated the Association for the Advancement of Sustainability in Higher Education (AASHE) first Sustainability Offices Retreat held in Canada, in July 2016.

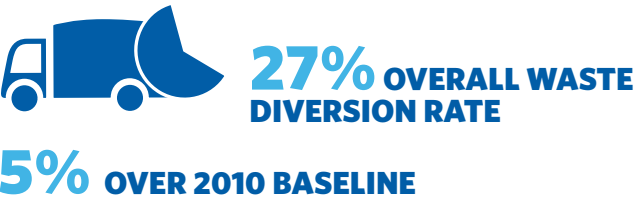


# MATERIALS AND WASTE

UBC Okanagan continues to reduce its operational waste and has improved its overall waste diversion rate. Despite an 85 per cent increase in FTE students since 2007, the campus demonstrated a 26 per cent reduction in operational waste going to the landfill per student, below the 2007 baseline.

## WORKING TOWARDS FULL WASTE RECOVERY/ REUSE

- Completed the fifth Bi-Annual Campus Waste Audit. Results demonstrated improvements in sorting behaviours in the compost and garbage streams by 5% and 15% respectively.
- Continued to develop and deploy waste management strategies at a departmental level targeting the reduction of source waste from vendors.
- Improved the annual campus waste diversion rate through the integration of waste awareness programming in the Power of You initiative, which commenced with deployment of the “It only takes 1 or 2” campaign and introduction of the online Recyclepedia in 2016.
- Demonstrating personal commitment to environmental stewardship, a staff-led volunteer group organized the clean-up of a multi-use pathway leading to campus. During the lunch hour event, over 286 pounds of litter from the Bulman Road access was collected and disposed of responsibly.



## 2050 WHOLE SYSTEMS PERFORMANCE GOAL

#6 STRIVE TOWARDS FULL WASTE RECOVERY/REUSE



### HOW WELL DO WE SORT?

A bi-annual audit held in 2016 involved collecting waste, recycling and compost and assessing contamination levels within each of the streams. The audit provides insights into sorting behaviours and informs zero-waste program development.

### DID YOU KNOW?

The number one recyclable material found in the campus’ waste stream is single-use beverage cups!

Bring a reusable mug to campus food outlets to save money and reduce waste.

UBC Okanagan Campus  
Photo credit: UBC Communications and Marketing

# WATER

UBC Okanagan’s commitment to reduce potable water consumption and to responsibly manage rainfall on campus continued in 2016. Despite growth in the campus population and in floor space, the implementation of water conservation measures supported a 7 per cent reduction in water consumption over the previous year and a 27% reduction in water use per FTE student since 2007. Additionally, the campus initiated the development of an integrated rainwater management plan to responsibly manage 100% of the rainwater that falls on the campus, which in turn supports a regenerative campus ecosystem.

**30%**  
REDUCTION OF  
WATER USE PER  
SQUARE METRE  
SINCE 2007

**27%**  
REDUCTION OF  
WATER USE PER  
FTE STUDENT  
SINCE 2007

## ADVANCING SUSTAINABLE WATER MANAGEMENT

- Reduced water consumption by seven per cent over the previous year.
- Completed the final phase of a three-year Irrigation Assessment Project. The project focused on sites associated with the campus residence buildings and led to technical guidelines for future irrigation on campus to conform to industry best practices.
- Identified deficiencies related to irrigation distribution uniformity, water savings and maintenance, including opportunities to achieve savings by targeted scheduling, automated weather monitoring, water meters and flow sensor capabilities managed from a centralized control system.
- Developed the Integrated Rainwater Management Plan to responsibly manage the rainwater that falls on campus and to sustainably accommodate the future growth of the campus in a way that respects natural hydrological processes, protects existing environmental values, and manages risk.
- Continued to incorporate native, drought tolerant vegetation into the campus landscape.

## 2050 WHOLE SYSTEMS PERFORMANCE GOALS

- #3 OPTIMIZE WATER QUALITY, SUPPLY, AND SECURITY
- #4 ENHANCE AND/OR RESTORE THE ECOLOGY
- #5 100% DIVERSION OF RAINWATER FROM MUNICIPAL SYSTEMS



### DID YOU KNOW?

The Pond, an engineered rainwater retention system, supports a diverse community of plants, birds and small animals. It is a resource for the campus community and part of the campus trails network.





# COMMUNITY

Our goal is to create a vibrant, complete, sustainable community at an urban neighbourhood scale, where people can live, work and learn together. To support this goal, we are providing diverse housing options, promoting and enabling sustainable transportation choices, developing and delivering community programs, and advancing policy and planning work to enhance social and environmental wellbeing.

Alumni Centre

Photo credit: UBC Communications and Marketing

## CULTIVATING COMMUNITY

At UBC, our goal of creating a vibrant and sustainable work-live-learn community is focused on leveraging our community's best assets: from being a place of learning and exploration with beautiful public spaces, parks and world-class amenities, to the diverse skills and talents of our students, faculty, staff and residents. We do this in a number of ways including delivering programming for all ages, building community capacity and engaging the community with outreach initiatives that support sustainability and wellbeing.

**600**  
**CHILDREN LEARNED ABOUT UBC'S**  
**ECO-SYSTEM THROUGH THE BEATY**  
**BIODIVERSITY UTOWN@UBC NATURE**  
**CLUB**



### UTOWN@UBC COMMUNITY GRANTS EXPANDED

Community Grants fund community-led projects focused on strengthening connectedness on campus.

This year, a new partnership with the Vancouver Foundation Neighbourhood Small Grant program was launched that allowed UBC to grow eligibility to include more staff, faculty, students and Musqueam community members. This partnership also enabled UBC to join a regional network of community organizations committed to empowering grassroots grant-making.

A continued partnership with UBC Wellbeing also awarded small grants to students interested in promoting wellbeing on campus.

Projects included a weekly intergenerational sing-a-long, a student-driven sustainable lunch program to help raise funds for food recovery, a Musqueamcedar weaving workshop and a youth film club.

### BUILDING COMMUNITY CAPACITY

- Collaborated with over 40 internal and external partners to deliver community programming that promotes inclusion and connectivity, health and wellbeing, arts and culture, and sustainability.
- Worked with Walk n' Roll parent volunteers to increase the number of walking school buses throughout the year to enable a 20% increase in safe, sustainable and active trips to school for community kids.
- Continuing to build capacity with campus youth by growing youth leadership and engagement programming year-round through BC Youth Week, clothing drives, and Project 529, which trains youth to help combat bike theft on campus.

### PLACE MAKING AND SPACE ACTIVATION

- Facilitated and supported a number of projects to animate campus, enhance the educational experience, promote creative expression and instill a sense of pride of place. Such projects included a contest that asked student artists to bring colour to campus bike storage spaces through murals, an interactive, colourful and dynamic lighting project in the Money and Raymond M.C. Lee Square, the installation of a Lucas Fiorella Friendship Bench promoting dialogue around mental health, and a rain graffiti project in collaboration with the SEEDS Sustainability Program to animate outdoor spaces during the rainy season.

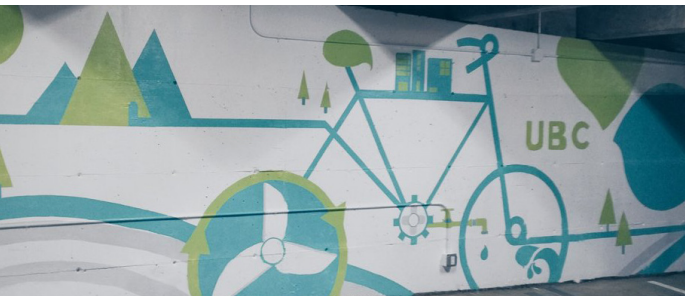
**36** **UTOWN@UBC PROJECTS**  
**FUNDED BY COMMUNITY**  
**GRANTS AWARDED**



# TRANSPORTATION

As the province’s largest university, UBC is a regional destination for students, staff, faculty, alumni and citizens from communities across the region. UBC is focused on reducing automobile trips to and from campus by adding new infrastructure and making improvements to existing infrastructure that encourages our campus community to choose more sustainable travel modes.

SINCE 1997  
**286%** INCREASE IN  
TRANSIT TRIPS



### BEAUTIFY MY BIKE CAGE

Campus & Community Planning’s Beautify My Bike Cage mural contest animates bike cages and celebrates cycling at UBC.

The theme of the 2017 contest was cycling, health and wellbeing.

Shavonne Yu’s winning design draws parallels between the intricacies of the humble bike and the dire need for systems thinking in communities. Powered by hydro, wind, and solar energy, the bike in the mural represents an optimistic vision of UBC’s future, propelling itself towards a more sustainable, interconnected future. Shavonne is currently a second year Media Studies student at UBC.

## ADVANCING SUSTAINABLE TRANSPORTATION

- Continued to encourage the use of non-single occupancy vehicle modes of travel through a range of programs, including a comprehensive transportation demand management strategy that includes transit discount programs, carpooling, car sharing, cycling, on-campus shuttles, and other sustainable transportation initiatives. Transit use has increased nearly 300% since 1997.
- New interim transit exchange opened at UBC in early 2017 for passengers arriving at the Point Grey campus. The fully built bus exchange will open in January 2019.
- Continued to work with key partners on the future planning for a rapid transit connection along the Broadway corridor to UBC.
- New multi-use pathway connection completed at the Okanagan campus that connects the campus to southeast Kelowna.

**62%** OF TRIPS TO/FROM CAMPUS BY  
TRANSIT, CYCLING AND WALKING



# HOUSING AND AMENITIES

UBC is building a vibrant community by providing campus housing options to students, faculty, staff and residents, and by developing recreation facilities, community centres, parks, open spaces, and child care within our neighbourhoods and academic spaces. Driven by UBC’s vision to be a world-class community of scholars with access to beautiful, functional, and sustainable campuses, we are committed to increasing housing choices and growing campus amenities.

**ASPIRATIONAL TARGET:** PROVIDE  
CAPACITY TO HOUSE UP TO 50% OF 2010  
FULL TIME STUDENTS

## IMPROVING HOUSING AVAILABILITY & AFFORDABILITY

- Completed Orchard Commons, 1,047 new student housing beds integrated with Vantage College including, food services, and new childcare spaces.
- Started construction on 211 new faculty and staff rental units, which will bring UBC’s total to more than 800 rental units.
- Opened the new UBC Aquatic Centre, providing a world-class facility for UBC’s students, athletes, staff, faculty, residents and visitors.
- Neared completion of the Brock Commons project — a student housing building with 17 storeys of mass timber above one storey of base concrete.
- Started construction on the Totem Infill and Exchange student housing projects. When complete, these projects will provide more than 1,000 new student housing beds.

## DID YOU KNOW?

UBC’s Neighbourhood District Energy System will eventually use waste heat from the TRIUMF research facility to provide hot water and heating to UBC’s neighbourhoods?

## VANCOUVER CAMPUS

**11,038**  
TOTAL STUDENT BEDS  
(32% OF 2010  
FULL TIME STUDENTS)

**665**  
FACULTY/STAFF  
HOUSING UNITS

**766**  
CHILDCARE SPACES



International Collegium space at UBC Okanagan Campus  
Photo credit: UBC Communications and Marketing



# WELLBEING

Wellbeing is essential to achieving our full potential in teaching, learning, research and engagement; creating healthier, happier, and more sustainable communities at UBC and beyond. Evidence tells us that people who are well are more able to engage in deep learning, are more likely to be retained and have a stronger sense of community. Wellbeing at UBC was created to help facilitate a cultural shift where wellbeing is valued as a deeply held commitment by the university. By focusing on human and ecological wellbeing in a holistic and regenerative way, UBC can help set up graduates, faculty and staff for long-term success.

That's why in October 2016 UBC proudly became one of the first universities in the world to adopt the Okanagan Charter, jointly signing alongside five other Canadian universities and signaling a formal commitment to supporting wellbeing on our campuses.

Along with this formal commitment, Professor Santa J. Ono also announced an investment of \$1 million in ongoing funding to support wellbeing at our Vancouver and Okanagan campuses.

"People who study, work and live in environments that make healthy living a priority are happier, more successful and better equipped to handle challenges," says Ono. "I am proud of UBC and our partner universities for taking steps to strengthen our communities, both on and off campus."

Initiatives such as Move UBC, Nutrition Month and Thrive along with efforts and research to support wellbeing in the classroom and in workspaces have helped highlight some of the ways that wellbeing can be integrated onto our campuses.

This commitment to wellbeing sends a powerful message about the type of institution that UBC aspires to be—one that excels in teaching, learning and research and that recognizes this excellence is supported by the wellbeing of our people and places!



UBC President and Vice-Chancellor, Professor Santa J. Ono  
Photo credit: UBC Communications and Marketing



Chef David Speight  
Photo credit: Student Housing and Hospitality Services

## RESIDENCE DINING: NEW FOOD VISION AND VALUES INSPIRING AND ENABLING A LIFETIME OF HEALTHY EATING

Unlike most universities who outsource food services to profit-prioritizing catering companies, UBC Food Services is self-operated. This gives us a unique opportunity to push sustainability to new heights, and overturn traditional notions of "institutional cooking"—missions near and dear to Executive Culinary Director David Speight's heart.

Our new Food Values and Vision statement, finalized this year, ensures all culinary decisions are guided by strict wellness and sustainability protocols. These include a pronounced emphasis on plant-based proteins, more local and organic foods, as well as minimally processed menu items. We continue to be proud Ocean Wise, Fair Trade, UBC Zero Waste and UBC Wellness partners.

The quality and downright deliciousness of our foods has also never been better. Come visit us at Open Kitchen to experience a truly stereotype-shattering menu in action!

Next up? Place Vanier's dining room has been renovated and renamed "Gather." It also serves a new enticing menu. Come by for poke bowls, sushi burritos, sublime vegan and vegetarian dishes, Vij's Indian, Latin American street food, and healthy handmade smoothies.

All this said, we know we still have a ways to go, and some of our values and visions remain aspirational. Huge gains have been made and will continue to be made.



# PERFORMANCE DATA

METRICS¹	VANCOUVER CAMPUS			OKANAGAN CAMPUS		
	2016/2017	TREND	BASELINE	2016/2017	TREND	BASELINE
CONTEXT						
Staff and Faculty Employees (FTE)	12,287	+16%	2007	1,080	+71%	2007
Student Enrollment (FTE)	47,373	+26%	2007	7,594	+86%	2007
Institutional Floor Space (m²)	1,522,833	+19%	2007	139,505	+94%	2007
TEACHING, LEARNING AND RESEARCH						
SEEDS² Participants (# of students, faculty, staff)	1091	N/A		N/A		
SEEDS Projects (#)	131	N/A		N/A		
SEEDS Research Reports (#)	175				N/A	
Faculty Engaged in Sustainability Research (#, % of all faculty)	423 (21%)	N/A		N/A		
Total Sustainability Courses (#)	666	N/A		134	N/A	
UBC Sustainability Scholars (# of internships with regional partners)	46	N/A		N/A		
OPERATIONS AND INFRASTRUCTURE						
Absolute Offsettable GHG Emissions (tCO₂e) Target: 33% reduction from 2007 levels by 2015; 67% by 2020.	40,536	-34%	2007	2,434	+11%	2007³
GHG Emissions per Student (tCO₂e/student FTE)	0.86	-47%	2007	0.32	-40%	2007
GHG Emissions per Floorspace (kgCO₂/m²)	26.6	-44%	2007	17.46	-43%	2007
Campus Energy Sources in GJ (%)⁴						
Natural gas	44%	-33%	2007	30%		
Electricity	44%			70%		
Biomass (Vancouver) / Propane and Diesel (Okanagan)	8%	N/A		Diesel 0.04% Propane 0.08%	N/A	
Renewable Natural Gas	4%			0.06%		
Absolute Energy Use (GJ)	1,649,762	-4%	2007	142,252⁵	+80%	2007
Energy Use Intensity (GJ/m²)	1.08	-12%	2007	1.02	-7%	2007
Absolute Water Use (m³)	2,473,793	-47%	2000	159,889	+36%	2007
Water Use Intensity (m³/student FTE)	52	-66%	2000	21	-27%	2007
Overall Waste Diversion Rate (%) Target: Increase overall waste diversion rate to 70% by 2016 and 80% by 2020	57	-2%	2010	27	+5%	2010
Operational Waste Disposed (tonnes) Target: Achieve a decreasing trend in operational waste disposed to landfill/incineration despite forecasted campus growth	3,488	+12%	2010	626	-11%⁶	2010
LEED⁷ Projects (# of certified and registered building projects)	29 (12 certified, 17 registered)	+2 LEED Gold certified, +3 LEED Gold registered, 1 withdrawn		2 Certified 1 Registered	+1 LEED Gold registered +1 LEED registered	
REAP⁸ Projects (# of certified and registered building projects) Target: All new construction and major renovations at the Vancouver and Okanagan campuses must achieve LEED or REAP Gold	33 (25 certified, 8 registered)	+1 REAP Gold certified, +1 REAP Gold registered, 2 withdrawn		1 Certified		

METRICS¹	VANCOUVER CAMPUS			OKANAGAN CAMPUS		
	2016/2017	TREND	BASELINE	2016/2017	TREND	BASELINE
COMMUNITY AND ENGAGEMENT						
Transportation Mode Share / Person Trips						
% of trips to/from campus by transit, carpool, cycling & walking	62	+12% in SOV person trips	1997	51⁹	+32% in SOV person trips	2009
% of trips to/from campus by transit	52	+286% in transit person trips	1997	27	-6.6% in transit person trips	2009
Student Beds (# of beds, % of 2010 full time students) Aspirational Target: Provide capacity to house up to 50% of full time students in 2010	11,038 (32%)	+10%	2014/2015	1,676	22% of 2016 FTE Students	N/A
Faculty and Staff Housing (total units)	665	+12%	2014/2015			
Child care (# of UBC-run child care spaces)	766	33%	2014/2015	36	No new spaces added	
STARS¹⁰ Rating	Gold	2nd Gold Standing				
Sustainability Coordinators Program (# of coordinators, Vancouver Campus) Power of You Program (# of volunteers, Okanagan Campus)	70 in offices 39 in labs	N/A	23		N/A	
Sustainability Tours						
# of tours conducted	316			3		
# of participants	3,070			56		
Digital Engagement						
# of Pageviews on sustain.ubc.ca / Visits on sustain.ok.ubc.ca	196,324			8,782		
# of users on sustain.ubc.ca	60,665					
# of Facebook Likes (UBC Sustainability)	3,345					
# of Twitter Followers (@SustainUBC)	11,200					
# of instagram subscribers	1,676					
Newsletter Subscribers (UBC Sustainability News)	2,840					

¹ Targets apply to Vancouver Campus.

² Social Ecological Economic Development Studies (SEEDS) Program.

³ 2007 baseline includes building emissions only. 2016 data represents emissions from all in-scope sources (e.g., buildings, fleet, paper, fugitive emissions) and accounts for a 94% increase in floor space and an 86% increase in student enrollment since 2007.

⁴ May not add up to 100% due to rounding.

⁵ Data provided by SMARTTool (UBC owned buildings consumption only).

⁶ Change of waste removal service provider occurred in 2016. New company provides more accurate weight reports in kg at point of collection.

⁷ Leadership in Energy and Environmental Design (LEED). Statistics are for the 2016 calendar year.

⁸ Residential Environmental Assessment Program (REAP). Statistics are for the 2016 calendar year.

⁹ Updated 2016/2017 data for UBC Okanagan not available at time of publication. 2015/2016 data used instead.

¹⁰ Sustainability Tracking Assessment & Rating System (STARS) administered by the Associations for Advancement of Sustainability in Higher Education (AASHE).



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