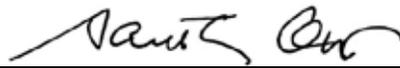


**SUBJECT** SUSTAINABILITY ANNUAL REPORT FY 2018-2019

**MEETING DATE** DECEMBER 5, 2019

Forwarded on the Recommendation of the President

**APPROVED FOR  
SUBMISSION**



\_\_\_\_\_  
Santa J. Ono, President and Vice-Chancellor

**Received by the Property Committee FOR INFORMATION**

**Report Date** 10 October, 2019

**Presented By** Robin Ciceri, Vice-President External Relations  
 Andrew Szeri, Provost and Vice-President Academic, UBC Vancouver  
 Gail Murphy, Vice-President Research & Innovation  
 Deborah Buszard, Deputy Vice-Chancellor and Principal, UBC Okanagan  
 James Tansey, Executive Director, Centre for Social Innovation & Impact Investing  
 Michael White, Associate Vice-President Campus and Community Planning  
 Rob Einarson, Associate Vice-President Finance & Operations, UBC Okanagan

## EXECUTIVE SUMMARY

In 2018-2019, through a number of new plans and actions, UBC significantly deepened our commitment to sustainability, within research and education, and operationally on both campuses at the scale of buildings and campus communities. This has resulted in even further global recognition of UBC's leadership role, including being ranked #1 in Canada by the Times Higher Education Impact Ranking under the United Nations' Sustainable Development Goal 11 for making communities inclusive, safe, resilient and sustainable, and #1 in the world for Goal 13 – taking urgent action to combat climate change and its impacts.

## Research and Education

We continued to align our sustainability actions with UBC's research and education mission by leveraging the faculty expertise on campus to inform Campus as a Living Lab and operational projects, and by enhancing practical and interdisciplinary learning experiences for students. This includes the expansion of the Bioenergy Research and Demonstration Facility (BRDF), which will help UBC Vancouver significantly advance towards its Climate Action Plan 2020 target of 67% GHG emission reduction below 2007 levels, and provide continued research and learning opportunities for UBC faculty and students. In addition, a new interdisciplinary research program on Urban Data Analytics began developing integrated reporting systems for UBC staff to better manage energy, water, heat, and other services. Other research and education highlights include a SEEDS Sustainability Program research cluster that engaged faculty to inform biodiversity-related operational policy aims, a new Interdisciplinary Education Grant program that supports faculty to develop new sustainability courses, and our largest ever cohort of Sustainability Scholars graduate students who delivered applied research reports to advance the sustainability efforts of twelve municipalities and other organizations across the region.

## At the Building Scale

Our progress on green building projects is a prominent example of putting our new commitments into action across both campuses. With support from leadership, staff, and faculty, UBC's new green buildings are already attracting awards and media attention for outstanding sustainability performance. This year we received recognition including the Province of BC's Net-Zero Energy Ready Challenge Design and Construction Incentive awards for the Skeena Residence at our Okanagan campus, and fourteen awards for the UBC Aquatic Centre, including the American Institute of Architects International Region Design Award.

## At the Community Scale

A diverse range of community-focused on-campus initiatives contributed to UBC's leading position among higher education institutions. The UBC Board approved a multi-year strategy to bring rapid transit to UBC Vancouver, which helped catalyze support from the City of Vancouver Council and TransLink's Mayors' Council on Regional Transportation to initiate planning of SkyTrain to UBC. The well-studied benefits of extending SkyTrain to UBC include a host of environmental, economic and social outcomes that will contribute significantly to a more sustainable region.

Key on-campus initiatives included fast-track delivery of more childcare spaces at UBC Vancouver to meet growing demand on campus, and implementation of our Housing Action Plan including stronger affordable rental commitments to support students, staff, and faculty in Vancouver. On both campuses, a range of programs deepened community engagement, inclusion and awareness, and a President's Roundtable on Climate Action explored regional opportunities for collaborative action.

Our priorities for the 2019-2020 fiscal year are described at the end of this report, and highlight our plans across both campuses to further embed sustainability within our Teaching, Learning and Research, Operations and Infrastructure, Community Development, and Communications and Engagement activities.

## PART ONE: 2018-19 FISCAL YEAR HIGHLIGHTS

### I. TEACHING, LEARNING AND RESEARCH

#### Key Achievements

- **Supported faculty collaborations through grants and fellowships – including the launch of the Interdisciplinary Education Grant program.** Six grants were awarded this year, with each project co-led by two faculty members. Examples include a field course from the Faculties of Land and Food Systems and Education focused on traditional cultures and resources, and an undergraduate course linking the Faculties of Arts and Applied Science to explore tangible, sustainable, humanitarian engineering solutions.
- **Delivered UBC's first Food Insecurity Action Symposium,** hosted by the SEEDS Sustainability Program and UBC Wellbeing to bring students together with diverse stakeholders to share research and identify tangible actions.
- **Supported the launch of the student-led Climate Hub** through strategic counsel by UBC Sustainability Initiative Directors, and administrative support. First year highlights included a new student mentorship program, a Climate Solutions Showcase, and a UBC Climate Asset Map.
- **Placed the largest ever cohort of Sustainability Scholars Program participants with regional organizations –** the number of graduate students grew by 34% this year, mainly due to an increased number of projects investigating social sustainability issues.

- **Supported Sustainability Ambassador Program participants to deliver the first student led Sustainable Development Goals (SDG) Roundtable at UBC**, attracting over 40 student-led organizations and groups, and leading to the development of a new Student Directed Seminar on SDGs.
- **Launched a new interdisciplinary research group - Urban Data Analytics** – a collaboration between faculty, post-doctoral fellows, students, and operations staff to consolidate, structure and share sustainability data in order to support campus as a living lab research and sustainable campus management.
- **Developed a new partnership to help advance zero-carbon-emissions building** – through the Zero Emission Building exchange, the UBC Sustainability Initiative is supporting collaborations to connect academic research and student projects with city planning and industry challenges.
- **Joined the Emerald Corridor Collaboratory to advance city and university partnerships** – UBC and the City of Vancouver are one of four university-city pairs working on more effective ways to collaborate on major regional issues like climate change and affordable housing.

### Program and Project Updates

- SEEDS Sustainability Program engaged 898 student, faculty, staff and community partner participants in 90 applied research projects to advance 28 UBC sustainability plans and policies.
- SEEDS awarded \$100,000 from the Program for Undergraduate Research Experience to launch an interdisciplinary applied research initiative: Enhancing Urban Biodiversity in a Changing Climate, and research cluster – the Campus Biodiversity Initiative: Research and Demonstration (CBIRD) – engaged faculty to develop biodiversity-related policy aims and asset maps.
- Sustainability Scholars Program matched 67 graduate students to research projects with 12 regional partners, including TransLink where student research is informing sustainable transportation planning.
- Annual faculty consultation identified 374 faculty members engaged in sustainability research.
- Sustainability course listing tool updated to include 687 courses, and provide advanced filtering functions by Faculty, Department and year-level.
- Student sustainability learning supported through mentoring and advising services.
- Student engagement and leadership on sustainability issues supported through delivering the Sustainability Ambassadors co-curricular leadership program, promoting volunteer and work experiences via the Student Sustainability network, hosting world-class authors via the UBC Reads Sustainability speaker series, and convening the Student Sustainability Council.

## II. OPERATIONS AND INFRASTRUCTURE

### (a) Vancouver Campus

#### Key Achievements

- **UBC ranked #1 university in the world** by the Times Higher Education Impact Ranking under United Nations' Sustainable Development Goal #13 for taking urgent action to combat climate change and its impacts.
- **Green Building Action Plan approved to ensure the design and construction of new buildings, renovations and retrofits achieve high levels of performance** that advance the campus toward our net positive sustainability vision, and lower the total cost of ownership. So far, 39 out of 246 action plan items have been completed.

- **Research-informed plan to expand the Bioenergy Research and Demonstration Facility (BRDF) approved.** Expected to eliminate an annual average of 13 to 15 thousand tonnes of GHG emissions over the life of the project, the BRDF expansion is supported by Canada Foundation for Innovation funding.
- **Energy retrofits and building recommissioning save UBC \$2.3M a year and nine percent in campus GHG emissions** compared to 2007 levels. As a result, UBC Energy & Water Services received the Association of Energy Engineers Institutional Energy Management Award this year.
- **Campus buildings win national and international awards for sustainable performance.** The Aquatic Centre has received fourteen national/international awards for high-performance, community use, and sustainability, while the Campus Energy Centre was recognized for leading-edge sustainable design from the Royal Architectural Institute of Canada.

### Program and Project Updates

- Approved Water Action Plan targets a 2% reduction in water use per student FTE per year through metering, landscaping / irrigation, alternative water sources, and engagement.
- Zero Waste Food Ware Strategy, informed by multidisciplinary SEEDS research, endorsed and will implement actions that aim to significantly reduce single use items, decrease compost contamination, and increase recycling rates.
- UBC's Residential Environmental Assessment Program (REAP) was shown through independent studies to reduce high rise multi-unit residential building energy use by 27% compared to BC average equivalent.
- Open access energy and water data made available to allow students, researchers, and UBC energy managers to identify efficiencies, compare performance, and evaluate best practices.
- Completed first installation of an Aircurity system in BC to reduce heating, cooling, and power needs, saving an estimated \$60,000 a year.
- Model of the Academic District Energy System created in Termis software – allowing UBC Energy & Water Services engineers to monitor and optimize performance in real time.
- 6000 sqm house in Totem Park certified LEED Platinum – highest sustainability certification.

### (b) Okanagan Campus

#### Key Achievements

- **District Energy System (DES) upgraded to increase capacity and reduce GHG emissions.** The DES was upgraded to increase the system's cooling capacity, and expanded to include the new Commons library – designed to rely solely on the DES for heating. These upgrades significantly reduced the campus' consumption of natural gas and associated GHG emissions. The campus's absolute greenhouse gas emissions are currently at the same level as 2007 despite a quadrupling of floor space and a tripling of the student body.
- **Buildings recommissioned to improve ventilation, reduce energy use.** Recommissioning projects this year resulted in improved building ventilation, reduced energy consumption, and improvements in cold weather operation.
- **Updated Design Guidelines** to integrate sustainability and high performance standards into the design process for all new capital projects.
- **Completed design of Skeena Residence** – UBC's award-winning first Passivehaus Building – a 220 unit residence, equivalent to Step 4 which is the best performance level of the BC Energy Step Code.

## Program and Project Updates

- Okanagan Climate Action Plan under development. A Climate Action Plan will ensure a proactive response to climate change that minimizes GHG impacts and helps prepare the campus for future adaptation measures, involving Scope 1, 2 and 3 emissions.
- Net Zero Carbon District Energy Strategy under development. A Net Zero Carbon District Energy Strategy is being prepared to guide future district energy system development and investments.
- In 2018, the Campus began implementing a Five-Year Strategic Energy Management Plan (SEMP). The SEMP provides a suite of energy conservation measures targeted to reduce energy consumption and GHG emissions.

## III. COMMUNITY

### (a) Vancouver Campus

#### Key Achievements

- **UBC ranked #1 in Canada** by the Times Higher Education Impact Ranking under Sustainable Development Goal #11 – making communities inclusive, safe, resilient and sustainable.
- **Launched external relations plan to support UBC's rapid transit strategy**, winning endorsement from City of Vancouver Council and TransLink's Mayors' Council on Regional Transportation. UBC continues to advocate for the project with various levels of government, participate in the project planning work led by TransLink, and generate positive media coverage.
- **Housing and childcare fast tracked to meet growing campus demand.** A total of 149 new childcare spaces and 243 additional rental units in development this year means UBC is on track to deliver on our Child Care Expansion Plan and Housing Action Plan targets.
- **Recognized Vancouver Pride in style with a celebration of diversity, inclusion** and UBC's Positive Space campaign. The event featured a partnership with Vancouver's Public Disco, a pop-up queer library, slam poetry, a mural painting, and a live show featuring UBC's own drag queen talent.
- **Continued growth in partnerships and programs that help build community**, including community grants, Walk n' Roll to School and events like Harvest *Festival* and Chef Challenge.

#### Program and Project Updates

- Successful trial of a "dockless" bike share program to enhance community wellbeing and serve as a first-/last-mile connection to transit – supporting approximately 300 trips per day.
- Completed Stadium Neighbourhood public consultation phase 3, presenting two neighbourhood plan options for community input and communicating next steps. Up to two thirds UBC affiliated housing is being considered as part of the final plan adoption.
- UBC Family Health and Resource Fair @ Acadia Park provided support to residents in the areas of health, safety, childcare, and early childhood development.
- Walk N' Roll program expanded further with volunteers offering to run walking school buses or bike trains from new neighbourhoods.
- New wayfinding installed to help cyclists find key destinations on campus via safe roadways to draw faster cyclists out of pedestrian zones and onto the streets for a more enjoyable trip.
- UBC Drinks Tap Water campaign launched to educate community members about the benefits of drinking tap water, and dispel misconceptions that bottled beverages are better.

**(b) Okanagan Campus****Key Achievements**

- **New campus entrance, bike lane, transit routes, and pedestrian overpass completed** as part of the John Hindle Drive extension project. Together, these updates provide quick and easy access from Glenmore Road for all modes of transportation including transit, relieving congestion on the east side of the campus.
- **Expanded electric vehicle charging including six new Level 2 chargers**, adding to the capacity provided by standard charging points.
- **New cycling routes improved connections between the campus and neighbouring communities.** We also increased bike storage to 452 – adding 55 two-bike racks and eight secure bike lockers in under serviced areas around campus.
- **Reduced campus printing equipment fleet** and replaced older inventory with new, more efficient machines, for an overall 33 per cent reduction in fleet size.

**III. COMMUNICATIONS AND ENGAGEMENT****(a) Vancouver Campus****Key Achievements**

- **Hosted a UBC President’s Roundtable on Climate Action, convening nearly 50 climate action leaders and thinkers** from business, government, first nations, utilities and the non-profit sector, alongside UBC’s senior leaders and researchers, to explore resilient partnerships for climate action in the Metro Vancouver region.
- **Launched a new Sustainability Leadership course**, training 60+ employees on how to foster more sustainable behaviours in the workplace and funding eight projects to pilot new sustainability innovations in workplaces and laboratories. Included a textiles recycling project, and a new hazardous waste reduction initiative for laboratories.
- **Engagement programs reached over 8,000 UBC employees**, with the Green Labs program receiving an international award for efforts to promote sustainable procurement.
- **Celebrated 20 years of Sustainability Coordinators**, with over 122 Sustainability Coordinators participating from 42 operational and academic departments this year.
- **UBC’s new event – Turn it Up, Disrupt – helped mark and celebrate International Women’s Day**, featuring three days of creative and bold engagement programming. Performances, workshops, exhibitions and presentations celebrated all women, including trans women, and members of historically and traditionally marginalized communities, including LGBTQ2SIA+, Indigenous, newcomer and refugee, and people with disabilities.
- **Kids Take Over UBC!** Young volunteers from the UBC community took on adult-sized roles to help host an exciting day of arts and culture activities. Over 1,000 people attended events including a Theatre Lab at the Frederic Wood Theatre, Culture Kids at the Museum of Anthropology, instrument petting zoo at the School of Music, and tours of the Longhouse with the First Nations House of Learning and local Musqueam students.

## Program and Project Updates

- New website delivered for the [UBC Sustainability Initiative](#) to provide an overview of sustainability at UBC, curated highlights of projects, and connect people to engagement opportunities.
- Front page of [Vancouver Sun](#) highlighted energy / water savings in context of campus growth.
- Reduced energy consumption in 100 ultra-low temperature freezers via the Chill Up campaign, and updated the Shut the Sash campaign to further reduce GHG emissions from fume hoods.
- Four major student residences participated in Shorter Showers energy and water conservation campaign.
- \$5,000 per year savings from Shut the Sash energy campaign in Chemistry buildings.
- Delivered the 2nd annual campus-wide Seasonal Shutdown energy conservation campaign.

## (b) Okanagan Campus

### Key Achievements

- **The Power of You conservation and awareness behaviour change program** engaged the campus in education and awareness campaigns targeting multiple performance areas – energy, carbon, water, waste, and ecology. The results this year include a 48% increase in reusable foodware use, 40% increase in sustainability pledges collected, and a 40% reduction in hot water use at Nicola residence building.

## PART TWO: 2019-20 FISCAL YEAR STRATEGIC PRIORITIES

### (a) Vancouver Campus

#### CAMPUS WIDE

- UBC executive (VP Academic, VP Research and Innovation) completes the refresh of governance for Sustainability across all of UBC, including any refinements to the leadership, management, programming and resource allocations for the UBC Sustainability Initiative.
- Further integration of teaching, learning, research, operations, and community development, including consideration for a more holistic and system view of progress measured against the UN's Sustainable Development Goals.

#### TEACHING, LEARNING AND RESEARCH

- Refine and expand SEEDS interdisciplinary research model with focus on three signature initiatives: Campus Biodiversity Initiative: Research & Demonstration; UBC Food System Project; Climate Crisis & Urban Biodiversity.
- Diversify project partners for the Sustainability Scholars program to expand the breadth of applied-research opportunities for students and build program resiliency.
- Evaluate, revise and deliver a refreshed and strengthened Sustainability Ambassadors program.
- Contribute to best practice for sustainability course inventories in higher education by conducting a robust analysis of keyword methods to share with institutions across Canada.
- Continue to incentivise and support faculty to develop sustainability curriculum through the UBC Sustainability Initiative Fellowship and Interdisciplinary Education Grants programs.

- Review the Campus as a Living Lab program, at its 10-year anniversary, for opportunities to enhance support of UBC sustainability goals through broader faculty engagement.
- Develop regional partnerships to expand interdisciplinary and applied research opportunities around urban development and climate change.

## OPERATIONS AND INFRASTRUCTURE

- Scope and develop the next phase of Climate Action Planning that will define pathways and milestones towards the next target of achieving carbon neutrality.
- Identify resources and methods that accelerate and amplify the impacts of climate action engagement programming and implementation strategies that empower the UBC community to make more sustainable decisions.
- Continue to implement UBC's Zero Waste Action Plan including investing in systems, infrastructure and engagement programs that will help advance towards our waste reduction targets.
- Implementation of Zero Waste Food Ware Strategy with the ambition to significantly reduce single use food ware items.
- Scope and develop a UBC Neighbourhood Low Carbon Energy Strategy which will set forward clear pathways and targets for residential neighbourhood developments and low carbon energy supply.

## COMMUNITY

- Continue advocacy to bring SkyTrain to the Vancouver campus through engagement with various levels of government, participation in the project planning work led by TransLink, and ongoing strategic communications.
- Completion of fast-tracked childcare facilities that support the delivery of new childcare spaces on campus ahead of targets in the Childcare expansion plan.
- Continue expansion of community programs with a focus on enhancing the campus experience through temporary art installations, low-barrier events for historically underrepresented communities, and new streams of small grants.

## COMMUNICATIONS AND ENGAGEMENT

- Develop a refreshed communications strategy for the UBC Sustainability Initiative based on any new strategic direction, including consideration for a new #rippleeffect campaign.
- Increase frequency and depth of engagement with regional leaders in sustainability, building on the success of President's Climate Action Roundtable and hosting the UC3 Summit.
- Review the UTown@UBC placemaking identity, website and other communication assets to support community engagement in opportunities for social inclusion and capacity building.

**(b) Okanagan Campus**

**OPERATIONS AND INFRASTRUCTURE**

- Complete a Net Zero Carbon District Energy Strategy that will support campus growth and the achievement of net positive performance in operational energy and carbon by 2050.
- Complete a Climate Action Plan focused on climate change mitigation and adaptation strategies to minimize impacts and ensure resiliency against future climate events.
- Complete construction of Nechako LEED Gold and Skeena Passivehaus Residences.
- Continue district energy optimization and operational efficiency projects.

**COMMUNITY**

- Host the National Campus Commuter Challenge in partnership with the City of Kelowna, BC Transit and key collaborating units across campus.
- Child care facility expansion and renovation underway to accommodate an additional 20 spaces.

**COMMUNICATIONS AND ENGAGEMENT**

- Continue 'Power of You' conservation and awareness behavior change program, with a focus on green labs and waste reduction.
- Engage the campus in the BC Cool Campus Challenge in collaboration with participating post-secondary institutions across the Province to reduce natural gas consumption.

**Attachments**

- i.* Appendix – Performance data
- ii.* 2018-2019 UBC Annual Sustainability Report (print copy available on December 5)

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**STRATEGIC CORE AREAS SUPPORTED**

**a People and Places      a Research Excellence      a Transformative Learning      a Local / Global Engagement**

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**DESCRIPTION & RATIONALE** The 2018-2019 UBC Annual Sustainability Report provides an overview of academic and operational sustainability, communication and engagement activities, and achievements at UBC's Vancouver and Okanagan campuses.

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**BENEFITS** The Annual Sustainability Report provides an opportunity to monitor and make continuous improvements in regard to our goals and targets. The report helps to demonstrate UBC's leadership and progress related to sustainability across the University.

Learning,  
Research,  
Financial,  
Sustainability &  
Reputational

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**RISKS** There is relatively low risk associated with the attached report. There is a potential reputational risk if UBC is not able to deliver on its approved sustainability goals and targets.

Financial,  
Operational &  
Reputational

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APPENDIX – PERFORMANCE DATA

I. Vancouver Campus - Teaching, Learning and Research

Performance Metrics	2018-19
Sustainability-related courses (#)	687
Sustainability-related degree programs (#)	47
Faculty Engaged in Sustainability Research (#)	374
Sustainability Curriculum Grants (\$)	43,613
UBC Sustainability Scholars (# of internships with partners)	67
UBC Sustainability Scholars (# of regional partners )	12
SEEDS participants (# of students, faculty, staff)	898
SEEDS projects (#)	90
UBC sustainability plans and policies advanced by SEEDS (#)	28
Sustainability Ambassadors (# attendees at events)	1,746

II. Vancouver Campus – Operations and Infrastructure

GOALS AND TARGETS	METRIC	2018-2019	CHANGE FROM PREVIOUS YEAR	TARGET	PROGRESS TOWARDS TARGET	STATUS																			
<b>CLIMATE LEADERSHIP</b>																									
Target 1: Reduce UBC Vancouver campus emissions by 67% by 2020	Annual GHG emissions	37,941	-11%	20,157	57%	●																			
Target 2: Reduce UBC Vancouver campus emissions by 100% by 2050	Annual GHG emissions	37,941	-11%	-	38%	●																			
<b>ZERO WASTE</b>																									
Target 1: Increase overall waste diversion rate to 80% by 2020	% waste diverted from landfill	54%	-7%	80%	68%	●																			
Target 2: Achieve a decreasing trend in operational waste disposed to landfill/incineration despite forecasted campus growth.	Waste disposal (% change from 2010)	<table border="1"> <caption>Waste Disposal Change from 2010</caption> <thead> <tr> <th>Year</th> <th>Change (%)</th> </tr> </thead> <tbody> <tr> <td>2011</td> <td>2%</td> </tr> <tr> <td>2012</td> <td>-8%</td> </tr> <tr> <td>2013</td> <td>6%</td> </tr> <tr> <td>2014</td> <td>14%</td> </tr> <tr> <td>2015</td> <td>2%</td> </tr> <tr> <td>2016</td> <td>12%</td> </tr> <tr> <td>2017</td> <td>14%</td> </tr> <tr> <td>2018</td> <td>11%</td> </tr> </tbody> </table>					Year	Change (%)	2011	2%	2012	-8%	2013	6%	2014	14%	2015	2%	2016	12%	2017	14%	2018	11%	●
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### III. Vancouver Campus – Community

GOALS AND TARGETS	METRIC	2018-2019	CHANGE FROM PREVIOUS YEAR	TARGET	PROGRESS TOWARDS TARGET	STATUS
<b>TRANSPORTATION</b>						
<b>Target 1:</b> Reduce single occupant vehicle trips to and from UBC by 20% from 1997	% SOV of the total mode share	33%	3%	20%	52%	
<b>Target 2:</b> At least 67% of all trips to and from UBC will be made by walking, cycling or transit by 2040	% walking, cycling and transit of the total mode share	67%	-3%	67%	100%	
<b>Target 3:</b> At least 50% of all trips to and from UBC will be made by public transit by 2040	% transit of the total mode share	53%	0%	50%	105%	
<b>STUDENT HOUSING</b>						
<b>Target:</b> Build up to the land use capacity of SHHS - operated housing on Academic Lands	Total number of student beds on campus	11,795	0%	17,300	68%	
<b>CHILDCARE</b>						
<b>Target 1:</b> Meet 15% of the infant/toddler/preschooler estimated unmet child care need by 2024	Total number of child care spaces	814	0%	996	82%	
<b>Target 2:</b> Meet 20% of the unmet child care by 2041	Total number of child care spaces	814	0%	1,212	67%	

### IV. Vancouver Campus – Communications and Engagement

Performance Metrics	2018-19	Change from Previous Year
Sustainability Coordinators in Offices and Labs (#)	120	-2%
Sustainability Tours (#)	173	N/A
Sustainability Tour Participants (#)	2,680	N/A
Digital Engagement (# website users #)	70,309	24%

## V. Okanagan Campus - Operations and Infrastructure

GOALS AND TARGETS	METRIC	Baseline	2017/18	2018/19	Previous Year Trend	Baseline Trend	STATUS				
<b>CLIMATE LEADERSHIP</b>							2013				
<b>WSIP 2050 Goal #1:</b> Achieve a net positive performance in operational energy and carbon by 2050	Annual GHG Emissions	3,633	3,055	2,156	-29%	-41%					
<b>WASTE</b>							2010				
<b>WSIP 2050 Goal #6:</b> Strive towards full waste recovery/reuse	Operational Waste Disposed <sup>1</sup>	707	632	618	-2%	-13%					
	Annual Waste Disposed <sup>2</sup>	707	745	718	-4%	+2%					
Demonstrate increasing trend in operational waste diverted from landfill	Waste diversion trend line from 2010	22%	24%	26%	28%	25%	26%	27%	33%	36%	

<sup>1</sup> Operational waste excludes construction and renovation material and all diverted weight.

<sup>2</sup> Annual waste includes construction and renovation waste generated by the campus.

## VI. Okanagan Campus – Community

METRIC	Baseline	Previous Year	2018/19	Previous Year Trend	Baseline Trend	STATUS
<b>TRANSPORTATION</b>						2009
Trips to/from campus by single occupant vehicle (SOV)	42%	47%	38%	-10%	-5%	
Trips to/from campus by transit, carpool, cycling and walking	58%	53%	62%	+10%	+5%	
Trips to/from campus by public transit only	34%	27%	31%	+4%	-4%	
# of Trips to/from campus per Person by public transit only	5,680	5,300	5,975	+13%	+5%	
<b>STUDENT HOUSING</b>						2007
Total number of student beds on campus <sup>3</sup>	968	1,676	1,676	0%	73%	N/A
<b>CHILDCARE</b>						2013
Total number of childcare spaces	36	36	36	0%	0%	N/A

<sup>3</sup> UBC Okanagan will be increasing the resident bed count by 440 new units in 2020-2021, a 26% increase.

## VII. Okanagan Campus – Communications and Engagement

Performance Metrics	2018-19	Change from Previous Year
Power of You (# of volunteers)	23	N/A
Sustainability Tours (#)	2	N/A
Digital Engagement – website users (#)	4,215	53%

# ANNUAL SUSTAINABILITY REPORT

2018 - 2019



THE UNIVERSITY OF BRITISH COLUMBIA

sustainability

## 2018/19 Fast Facts

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### VANCOUVER

38%   
reduction in absolute  
GHG emissions since  
2007

156   
additional below-  
market rental units  
under construction

49%   
reduction in absolute  
water use since 2000

27   
wellbeing projects  
supported through  
strategic initiatives fund

687   
sustainability-related  
courses

66%   
of trips by sustainable  
modes of transportation

374   
faculty researching  
sustainability-related  
topics

26   
student-led groups  
participated in Student  
Sustainability Council

### OKANAGAN

41%   
reduction in absolute  
GHG emissions  
since 2013

14%   
reduction in absolute  
water use since 2013

14%   
increase in waste  
diversion rate since  
2010

62%   
of trips by sustainable  
modes of transportation

# Milestones

---

## 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 five 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 released.

### 2015

MOU with Metro Vancouver and City of Vancouver signed. Second Gold rating in STARS earned.

### 2016

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

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

### 2017

Hosted International Sustainable Campus Network (ISCN) conference at Vancouver campus.

### 2019

Ranked #1 for taking urgent action to combat climate change and its impacts (Times Higher Education, UNSDG #13)

\*First university in Canada



# Foreword

**This year, UBC's leadership endorsed new strategic plans and actions that significantly deepen our commitment to sustainability across teaching, learning and research, operations and infrastructure, and community.**

To deliver on these ambitious plans, our focus is on aligning UBC's research and education mission with sustainability actions. For example, this year we combined faculty and staff expertise to attract investment from the Government of Canada to expand our Bioenergy Research and Demonstration Facility. This will enable UBC to make significant progress towards our Climate Action Plan 2020 target of 67% reduction in GHG emissions below 2007 levels, while providing enhanced research and learning opportunities for UBC faculty and students.

In addition, our new Green Building Action Plan (developed with input from 20 faculty) commits UBC to a vision that by 2035, our buildings will make net positive contributions to human and natural systems. While in the Okanagan, updated Design Guidelines integrate sustainability and high performance standards into the design process for all new capital projects. This approach is already attracting recognition, including the Province of BC's Net-Zero Energy Ready Challenge for the Skeena Residence, and numerous sustainability awards for the UBC Aquatic Centre.

This year our community building efforts, supported by faculty, students, staff and residents, included fast-tracking more childcare spaces and increasing affordable rental housing, successfully opening UBC's new Indian Residential School History and Dialogue Centre, and celebrating Vancouver Pride week. In addition, advocacy by a diverse range of the UBC community to bring the SkyTrain to UBC Vancouver won endorsement from City of Vancouver Council and the Mayors' Council on Regional Transportation, and we continue to work closely with TransLink on the next steps.

Beyond our campuses, UBC aims to play a leadership role on global and local sustainability issues. One way we can do this is by looking through the lens of the United Nations Sustainable Development Goals. This year, UBC ranked #1 university in the world under Goal #13 for taking urgent action to combat climate change, and #1 in Canada under Goal #11 for making communities inclusive, safe, resilient and sustainable (Times Higher Education, 2018).

UBC is proud of these achievements, but conscious of the urgent need to accelerate action on critical issues like the climate crisis. Our efforts to map UBC Sustainability activities to the SDGs on pages 6 and 7 are an early attempt to identify which goals and targets UBC is actively working towards through our three sustainability pillars, and explore areas where we might collaborate with other organizations to advance shared goals.

We invite you to join us, and look forward to reporting our progress next year.

## **Dr. James Tansey**

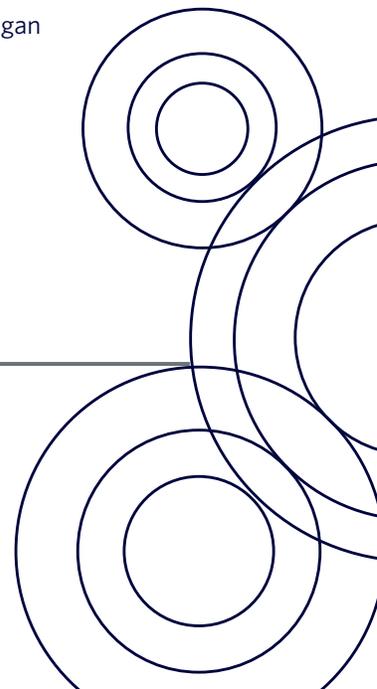
Executive Director  
UBC Sustainability Initiative

## **Michael White**

Associate Vice-President Campus + Community Planning

## **Rob Einarson**

Associate Vice-President  
Finance & Operations, UBC Okanagan



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## About UBC

The University of British Columbia is a global centre for research and teaching, consistently ranking among the 40 best globally, and among the top 20 public universities in the world. Since 1915, UBC's West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. At UBC, bold thinking is given a place to develop into ideas that can change the world.

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

# The United Nations Sustainable Development Goals

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## Overview

The Sustainable Development Goals (SDGs) framework includes 17 goals and 169 targets designed to stimulate action in areas of critical importance for humanity and the planet.<sup>1</sup> Organizations across the world have adopted these goals to evaluate their work and prioritise future actions.

In 2017, UBC began reviewing our sustainability efforts in relation to the SDGs by assessing the university's commitments as expressed in some of our key sustainability plans and reports. This evaluation found strong commitment from UBC to advancing Goal 4: Quality Education, Goal 9: Industry, Innovation, and Infrastructure, and Goal 11: Sustainable Cities and Communities, but was limited in scope.<sup>2</sup>

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## Mapping the goals

This mapping exercise expands the scope of our previous study to include 9 new types of evidence, and updates the data for 2018-19. The purpose was to identify which SDG goals and targets UBC is actively working towards through our three sustainability pillars, and explore areas where we might collaborate with other organizations to advance shared goals.

The activities counted included those managed directly by UBC through its academic, operational, and community building efforts, but did not include activities led by partners on campus e.g. student groups, the University Neighbourhoods Association.

## Methodology

UBC actions were matched to the language of each SDG goal and/or target. For this exercise, only one piece of evidence was required to count UBC as working towards the goal.

Evidence belonged to one of 11 types:

- UBC strategic plan
- UBC policy
- Staff unit policy
- Staff unit doing direct work on an area
- Infrastructure project
- Funded ongoing program/project/campaign
- Active support for partnership networks
- Academic course that covers content related to the goals or targets
- Faculty with research interests that cover content related to the goal or targets
- Research project
- Research unit

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1 UN General Assembly, Seventieth Session. Resolution 70/1: Transforming our World: the 2030 Agenda for Sustainable Development. 21 October 2015.

2 Mapping UBC Sustainability to the United Nations Sustainable Development Goals. Emily Mann, Sustainability Scholar, UBC Sustainability Initiative. 2017.



## What we learned

The results indicate that UBC is actively working on all 17 goals across the spectrum of our Teaching, Learning and Research, Operations and Infrastructure, and Community activities. For nine out of 17 SDGS, UBC is working to advance them across all three sustainability pillars. For six out of 17 SDGS, we are working in two out of three sustainability pillars. For two out of 17 SDGS, we are working in one sustainability pillar.

In line with the 2019 Times Higher Education University Impact Ratings, our results indicate that UBC is strongest in advancing Goal 11: Sustainable Cities and Communities, and Goal 13: Climate Action.

As an initial review, significant limitations include not assessing all the available evidence of activities across UBC, nor considering the amount of effort associated with an activity, or the effectiveness of an activity towards advancing the goal.

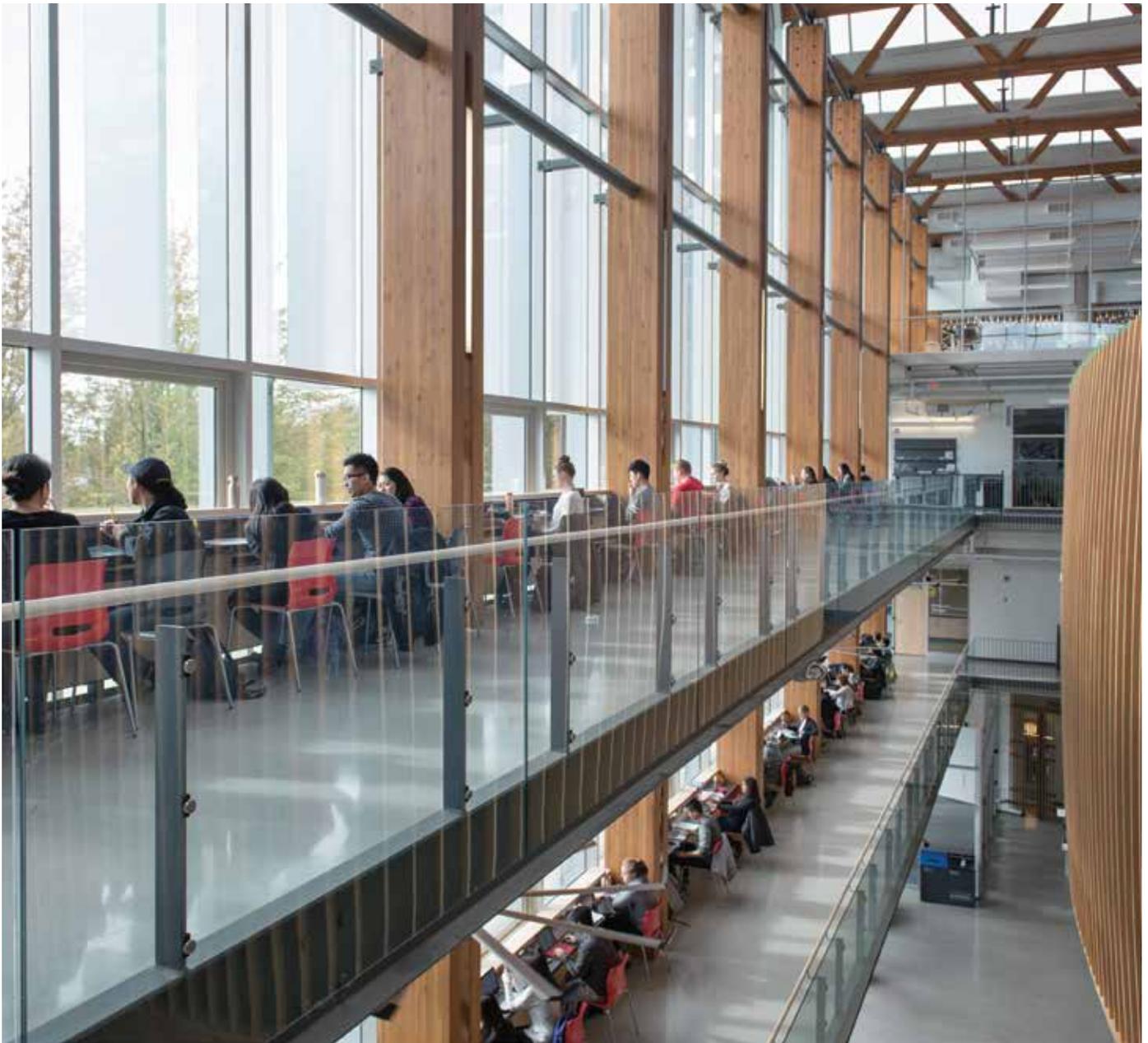
## Next Steps

The results of this mapping exercise demonstrate that UBC is actively working towards advancing all 17 of the Sustainable Development Goals. In the future, UBC may consider the number and strength of our activities under each SDG to understand which goals are getting the strongest support, and which require more focus.

Demonstrating the relationship between our sustainability initiatives and the SDGs provides a common language for UBC and partners to identify areas to work on together, and the opportunity for us to act as change agents by building consensus on priorities, and aligning regional efforts.

We invite partners across the region to work closely with UBC to advance the goals together.





## Teaching, Learning and Research

Across UBC, faculty and students are teaching, learning and exploring sustainability through hundreds of courses, programs and research projects. We are committed to fostering the knowledge, skills and experience of students in order for them to serve as agents of change, community leaders, and responsible global citizens. UBC's ambitious goals are for all students to have access to sustainability learning alongside their chosen degree program; to create diverse learning and co-curricular engagement opportunities for students; and to be global leaders in applied research on sustainable behaviour, infrastructure, and communities.

## Teaching and Learning

Each year, thousands of students learn about issues like climate change, biodiversity, food systems, social justice and more through courses and programs offered by diverse faculties and a variety of disciplines. To encourage students to explore sustainability, we curate and promote UBC's wide range of sustainability learning opportunities. We also support teaching and curriculum innovation through interdisciplinary education grants and faculty fellowships.

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### Faculty collaborations through grants

The Interdisciplinary Education Grant program launched in fall 2018 to inspire the design and development of interdisciplinary courses. The aim is to strengthen opportunities for students to learn about sustainability topics and challenges from more than one perspective, and to spark collaborations between instructors from different disciplines. Six grants were awarded this year, with each project co-led by two faculty members.

**EarthCARE Sustainability Residency** | A field course from the Faculties of Land and Food Systems and Education. Students learn from community leaders who fight to protect their land, water, food security, language, and alternative systems of education.

**Humanitarian Engineering – Politics and Practice** | An undergraduate, project-based course linking the Faculties of Arts and Applied Science. Students work in interdisciplinary teams to develop tangible, sustainable solutions to the world's most challenging humanitarian issues.

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### Sustainability Fellowships inspire Equity & Inclusion Scholars Program

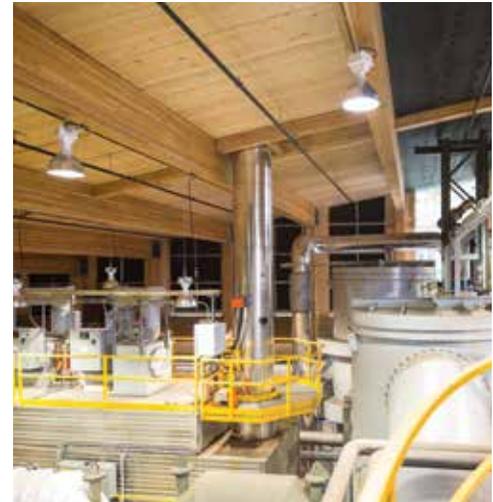
Our Sustainability Fellowships have helped shape a new program at UBC; the Equity & Inclusion Scholars Program. This program supports innovative approaches to building capacity for transformative teaching and learning through the integration of equity, diversity, and inclusion.

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### Sustainability courses easier than ever to find online

Identifying and promoting sustainability courses is a first step towards embedding sustainability in student learning, and a critical resource for faculty developing new sustainability courses and programs.

**Search over 650 courses** | Our curated course list – updated every year – is available via an online tool which can now be filtered by Faculty, subject and year-level.



**The future of energy** | Imagining a future where energy systems are completely different to today is hard. It requires understanding new technologies, policy initiatives, a dynamic global context, and a diverse range of social and environmental opportunities and barriers. And it asks us to transform all this into new ideas that are environmentally sustainable, socially just, equitable, and economically accessible to all.

This kind of thinking is highlighted in a renewed course: ENVR 410 – Energy, Environment, and Society. This senior undergraduate course asks students to approach with open curiosity the polarizing facets of debates, the complexity of political histories and contexts, and to assess different energy systems – both socially and environmentally.

“It is easy to get caught up in the science behind energy systems when you understand it, and it can be difficult to try to understand why other people have such strong polarizing opinions on the subject. This course really helped to bridge this gap for me,” (2018W student, ENVR 410).

---

# 687

sustainability-related courses

# 47

sustainability-related degree programs

# 6

Interdisciplinary Education Grants

# 12

Sustainability Fellows from 10 departments

# Sustainability Scholars Program

An innovative paid internship program that matches graduate students with on- and off-campus partners to work on applied research projects that advance sustainability. Projects explore topics such as emissions reduction, food security, sustainable transportation, green buildings, biodiversity, climate change, social sustainability, and more.

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## Mobility research informs sustainable transportation

Six Scholars worked on sustainable transportation projects this year. These projects ranged from a lifecycle cost analysis of fleet vehicles, to parking policy research for car share vehicles, improving transit services, understanding the role charging station infrastructure plays in EV adoption, and exploring the effect of transit investment on land values.

**Lifecycle cost analysis of fleet vehicles** | A detailed assessment of the carbon emissions and energy consumption (including raw material production, vehicle manufacture, transportation, operation and decommissioning) of two electric vehicle models.

**Transit On-Demand: Case Studies & Recommendations to Support New Mobility Options on Bowen Island** | On-demand mobility services can reduce transit costs and improve customer experience. This best practice review assisted the future implementation of on-demand service in Metro Vancouver.

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## Scholars program growth

The program experienced a 34% increase in the number of internships, with much of the growth coming from projects investigating social sustainability issues.

**Over 30 social sustainability projects since 2017** | Scholars have supported regional social sustainability efforts on topics such as workplace childcare, food insecurity, Indigenous wellness indicators, community-programming evaluation, and health and wellbeing indicators in building design.

**Largest cohort of Sustainability Scholars** | 67 students from 31 graduate degree programs worked with mentors from across the region for local governments, BC Hydro, TransLink, and many UBC departments.



**Real world application** | In 2018, Isabella Picui, (MA Student, Political Science) decided to test her academic skills in the field of mental health and wellbeing.

“As a Master’s student, I wasn’t sure if I wanted to pursue a future in academia, or if I might want to explore professional career options. I decided to apply for the UBC Sustainability Scholars Program to see how I could use the skills I had developed through my education in a professional setting.”

“I really enjoyed this program because it’s quite applied; it’s easy to see how you could work on projects outside of your academic interests. I also find the work very rewarding—my project is concerned with the implementation of UBC’s Wellbeing Strategy. I’m quite passionate about mental health and wellbeing, so it’s nice to work on something that might have a positive impact on someone else’s life.”

“I can’t recommend this program more for students who want to explore professional development outside of their usual graduate work!”

67

graduate student internships

12

partner organizations

31

graduate degree programs with participating students

17

social sustainability projects

## SEEDS Sustainability Program

Applied research and interdisciplinary partnerships between students, faculty, staff and community partners. SEEDS advances sustainability ideas, policies, and practices by using the campus as a living laboratory, supporting the integration of academic and operational sustainability efforts.

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### SEEDS awarded \$100,000 for two-year pilot on urban biodiversity in a changing climate

This award from the Program for Undergraduate Research Experience (PURE) supports a pilot initiative to develop undergraduate applied research pathways, launch an Interdisciplinary Knowledge Exchange, and promote inclusive research design and engagement models that expand underrepresented students' access to applied research opportunities.

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### Applied local research

Students and faculty partnered with staff and community partners through SEEDS to pilot new solutions to local versions of wider societal issues, while advancing UBC's sustainability commitments. Some examples include:

#### Living Breakwaters: nature-based solutions to coastal adaptation

Can nature-based reefs protect our region's coasts and cliffs? This project developed climate change related coastal adaptation ideas that incorporate living systems and enhance local ecosystems while reducing flooding and erosion risks.

**Inclusive Athletics and Recreation: Move More** | Athletics and Recreation partnered with kinesiology students to identify barriers and facilitators for Asian females to participate in physical activity, a community they identified as underrepresented.

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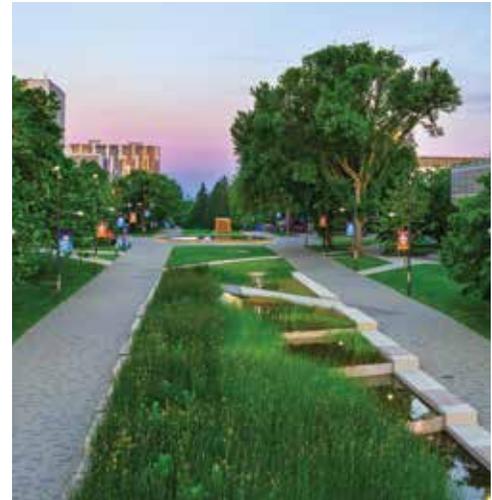
### Predicting bird collisions in the living lab

A collaboration between Applied Science and Geography developed sensors and software to map and predict bird collisions with campus buildings, enabling UBC to enhance biodiversity in the built environment.

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### New Action Research Symposiums

UBC's first Food Insecurity Action Symposium, hosted by SEEDS and UBC Wellbeing, brought students together with diverse stakeholders to share research and identify tangible actions.



### Biodiversity at the Cascading Fountain

Tasked with investigating an algae bloom in a campus water feature, UBC Environmental Science students worked with faculty and staff to develop new ways to preserve and enhance biodiversity.

"We thought the bloom was due to a buildup of nutrients from the collection and recycling of rain water harvested from Main Mall. But control and management of the algae with chemicals was not a sustainable practice," said Doug Doyle, Associate Director, Municipal Engineering at Campus + Community Planning.

However, the student team discovered that nutrients weren't to blame. "It's very difficult to reduce the algae because it's a really resilient species," said Melissa Lin. "So we thought why don't we make this a biodiversity learning lab instead and support UBC's goals in providing a sustainable and biodiverse campus."

Switching their focus from control to biodiversity, the team presented new ways for UBC to support aquatic life in the water feature. "We've realized that we have to learn to live with algae, and leverage its presence into something positive," said Doyle.

---

# 28

UBC sustainability plans and policies advanced

# 898

students, faculty, staff and community partners engaged

# 167

applied research reports

# 47

graduate and undergraduate courses integrated SEEDS projects

## UBC Climate Hub

A student-led, university-wide initiative launched in 2018, the Climate Hub's hybrid structure, with a full-time coordinator, five student staff, and an agenda set by students, makes it uniquely positioned to create climate narratives that resonate with a key audience - youth. The focus? Powerful storytelling - to successfully build community and empower broad, diverse, and new audiences to take action on climate change.

In its first year, the Climate Hub launched several initiatives, reaching thousands of students in the process. Highlights include a new mentorship program connecting over 100 undergraduate students with over 40 graduate student mentors; a Climate Solutions Showcase that attracted over 400 participants and 20 community partners, and; a UBC Climate Asset Map to help community members explore the diversity of climate-related projects and resources at UBC.

Next year, the Climate Hub is planning a series of peer-to-peer workshops leveraging UBC student energy to inspire hope and build agency among high school students.





## UBC Sustainability Ambassadors

An immersive leadership experience for students interested in personal, collaborative, and community engaged learning. Designed to develop and strengthen key leadership and systems thinking skills, the program encourages students to make meaningful and informed life and career choices while designing projects that foster human wellbeing and sustainability.

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### Public engagement events brought the campus together

This year the Sustainability Ambassadors developed programming and outreach to support a number of key engagement events across campus. Some highlights included:

**Sustainability Storytelling Night** | Five talented storytellers shared successes, challenges, and what they learned from promoting sustainability throughout the campus community. Attended by over 150 people, the event included students, community members, faculty and staff.

**The UBC Sustainability Fair** | The fair helped raise awareness of sustainability initiatives related to social and economic wellbeing, equity and education, and environmental protection. Over 34 organizations participated, supported by seven off-campus sponsors.

**Sustainability Career Connections** | Drawing on the five P's (People, Planet, Prosperity, Partnership, and Peace) of the Sustainable Development Goals (SDGs), this event featured discussions between six panelists and over 100 students on how to align their careers with advancing the SDGs.

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### Ambassadors offer sustainability consultancy to UBC student groups

Sustainability Ambassadors advise other UBC student clubs and groups on planning specific events, integrating sustainable practices, and bringing attention to resources. This year the Ambassadors reached out to six student groups including the Singapore Students' Association and the Seri Malaysia Club to reduce single-use plastic use at their events by using compostable cutlery and bring-your-own mugs and plates.



### First student-led Sustainable Development Goals Roundtable

Besides boosting student awareness of the Sustainable Development Goals (SDGs), the aim of the SDG Roundtable was to facilitate increased collaboration between a diverse group of UBC student organizations. Through active discussion and listening, the Roundtable demonstrated how a sustainability lens can highlight the common vision and purpose between student groups with very different goals.

The event attracted over 40 student-led organizations and groups, and has motivated the Ambassadors team to develop a new Student Directed Seminar on the SDGs.

"I discovered that the way to achieve or work on the SDGs does not necessarily have to be on a governmental or institutional level; that it can be achieved through other personal and group actions." (SDG Roundtable Participant)

"The relative freedom we have over our own projects and its structure was liberating, as I felt a sense of agency in fulfilling the Ambassadors' vision and mission." (Sustainability Ambassador)

16

Ambassadors planned six unique engagement projects

1,700+

attendees at Ambassador-led events

\$11,000+

raised by Ambassadors to support sustainability projects

100%

of Ambassadors report gaining transferable skills and experience

## Co-Curricular Student Engagement

All UBC students can integrate sustainability into their learning experience and have their say on UBC's sustainability priorities. Our co-curricular engagement programs offer unique ways for students to develop leadership skills and empower peer-led networks of sustainability champions. As a result, students have multiple opportunities to participate in transformative and experiential learning.

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### Student Sustainability Council advised key UBC plans, projects

The Student Sustainability Council comprises representatives from various sustainability-related student groups at UBC. This year, 26 student groups provided feedback and input on eight staff and student-led projects including the AMS Student Driven Sustainability Strategy, the Stadium Neighbourhood Plan, and the UBC Wellbeing Strategy.

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### Student Sustainability Network added 126 new members

Members of the Student Sustainability Network develop their leadership skills by volunteering at sustainability events throughout the year. This year, we welcomed 126 new members and supported over 116 engagement opportunities.

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### UBC Reads Sustainability drew regional and global names

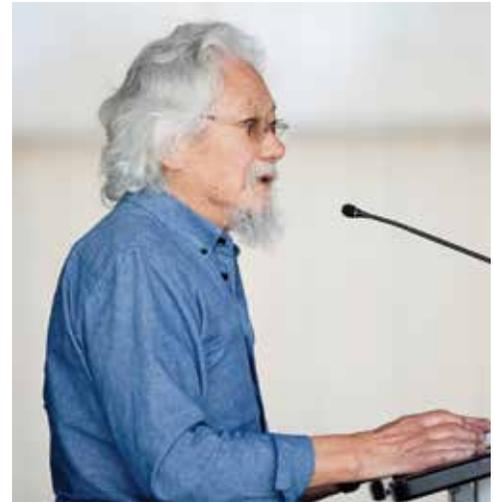
This year our speaker series hosted leading BC authors and partnered with UBC Connects to host international author Michael Pollan.

- Sarah Cox: *Breaching the Peace: The Site C Dam and a Valley's Stand Against Big Hydro*
- Johanna Wagstaffe: *Fault Lines Understanding the Power of Earthquakes*
- Michael Pollan: *How to Change Your Mind*

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### Supported over 20 student groups

This year, the UBC Sustainability Initiative supported over 40 individual students and 20 student groups to develop projects and events including the AMS Student Union Development conference, the UBC Climate Hub, and more.



**Hope in the Climate Crisis: Transitioning Our World** | This intergenerational, interdisciplinary event featuring academics from a variety of different backgrounds and perspectives highlighted the breadth and depth of UBC's climate leadership.

Organized by the Sustainability Ambassadors, Hope in the Climate Crisis: Transitioning Our World showcased a range of research and leadership activities on sustainability taking place in the UBC community.

The event provided opportunities for leaders in sustainability across multiple disciplines to share current research, stories and insights in their respective fields, and engage a broad group of UBC students in climate change discourse. It was a unique opportunity to learn from UBC professor emeritus David Suzuki and four current UBC academics: Daniel Pauly, William Rees, Janet Bulkan, and Jiaying Zhai.

The discussion aimed to move the conversation away from despair to hope and action. Over 400 student, staff, faculty, and community members attended the event.

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# 26

student-led groups participated in Student Sustainability Council

# 126

students joined the Student Sustainability Network

# 400+

attendees at David Suzuki climate crisis event

# 8,000+

online views of UBC Reads Sustainability talks

## Campus Engagement

Our behavioural change programs engage students, staff, and faculty to learn about green practices and contribute to achieving UBC's sustainability goals. This year we continued to focus on high-impact areas and opportunities, including research laboratories, student residences, and workplace engagement to advance resource conservation and sustainability leadership.

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### Engagement with over 8,000 UBC employees (Vancouver)

This year we launched a new Sustainability Leadership Training course, training 60+ employees on how to foster more sustainable behaviours in the workplace. In addition, ongoing projects, campaigns, and recognition for sustainability efforts in offices, laboratories, and residences included:

- Our Green Labs program was recognized with an international award for efforts in promoting sustainable procurement
- 100 Ultra low temperature freezers were recalibrated through our 'Chill Up Challenge', saving annual energy equivalent of 20 houses
- Four major student residences participated in the Shorter Showers energy and water conservation campaign
- Eight projects funded through the Workplace Sustainability Fund and Green Labs grants
- \$5,000 per year savings from Shut the Sash energy campaign in Chemistry buildings

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### 20 Years of Sustainability Coordinators (Vancouver)

UBC's Sustainability Coordinator Program celebrated its 20<sup>th</sup> year of building sustainability leadership and fostering change on campus. This year over 120 Sustainability Coordinators participated from 42 departments.

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### The Power of You (Okanagan)

The Power of You is UBC Okanagan's signature conservation and awareness behaviour change program. Results this year include:

- 36% waste diversion rate
- 48% increase in reusable foodware use
- 40% increase in sustainability pledges collected
- 40% reduction in hot water use at Nicola residence building



**UBC leads Cool Campus Challenge** | This winter, UBC Vancouver and Okanagan campuses co-led the BC Cool Campus Challenge - a fun and friendly initiative between universities and colleges across the province to save energy and reduce greenhouse gas emissions. UBC worked to turn down temperatures in campus buildings and encourage energy conservation behaviours to reduce natural gas consumption during peak heating season. In total, over 1,000 UBC campus community members participated in the challenge and signed the pledge.

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### Green Labs Botany Energy Savings

**Pilot** | Growth chambers, commonly used in plant research, are very energy intensive. Leveraging a grant received through the Green Labs Fund, the Department of Botany piloted and measured energy savings by switching to more energy efficient LED lighting in plant growth chambers. Proving viable, the pilot demonstrated the potential to save up to 54,000 kWh/year in electricity if expanded across the department.

# 42

operational and academic departments engaged (Vancouver)

# 57,488

cycled during Bike to Work Week saving 12,000+ KG GHG emissions (Vancouver+ Okanagan)

# 40,000

people engaged by Zero Waste Squad (Vancouver)

# 48%

increase in reusable foodware use (Okanagan)

## Research

UBC plays a leadership role among global post-secondary institutions that focus on researching, developing, and demonstrating sustainable practices. With nearly 400 faculty investigating sustainability, our goal is to excel across the spectrum of fundamental and applied research. Below are some examples of current groups and projects – just a small selection from an incredible breadth of work across the university.



### Interdisciplinary Research Groups

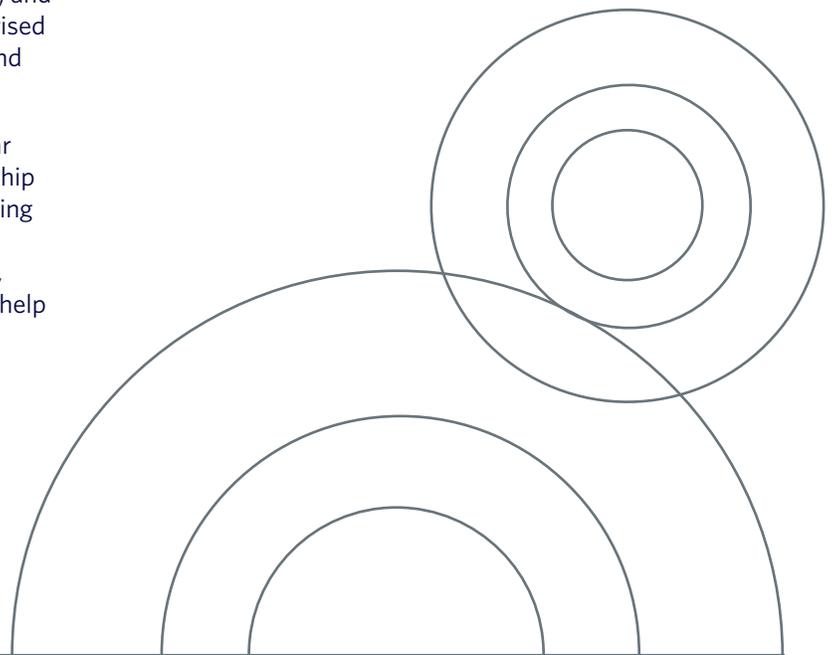
**Urban Data Analytics Group** | The Urban Data Analytics Group is a new collaboration between faculty, post-doctoral fellows, students, and operations staff to consolidate, structure and share sustainability data in order to support Campus as a Living Lab research and sustainable campus management. The group is led by Dr. Adam Rysanek, Dr. Mike Kennedy, and Dr. James Tansey.

**Centre for Sustainable Food Systems at UBC Farm**  
A teaching and research centre and local-to-global food hub working towards a more sustainable, food-secure future. The Centre's outdoor living laboratory is committed to finding solutions to local and global challenges. It is located at the UBC Farm – situated on the traditional, ancestral, and unceded territory of the Musqueam people, and comprised of cultivated annual crop fields, perennial hedgerows and orchards, pasture, teaching gardens, and forest stands.

**Zero Emission Building Exchange (ZEBx)** | This year the UBC Sustainability Initiative formed a new partnership with the Zero Emission Building Exchange. ZEBx is leading a regional initiative composed of public and private organizations to rapidly accelerate the demand, design, and construction of zero-carbon-emission buildings to help meet local and national climate change targets.

### Global Environmental Change and Food Security

A collaboration between faculty in the School of Public Policy and Global Affairs, the Institute for Resources, Environment, and Sustainability, Centre for Sustainable Food Systems, and Forest Conservation Sciences. This group is examining research questions related to both the socio-economic and ecological drivers and outcomes of variations in farm size.



374

faculty researching sustainability-related topics

73%

departments with faculty researching sustainability-related topics

17

sustainability-related graduate research programs

40+

research groups exploring sustainability-related issues

## Research Projects



### UBC Sustainability Data Platform

A project by the Urban Data Analytics Group to improve access to campus sustainability data, and to highlight previous research that is already using campus data. The platform is designed to support research questions related to sustainability in the context of urban planning and development. It is the product of collaboration between UBC academic researchers and operational departments including Campus + Community Planning, Energy & Water Services, and Information Technology.

So far, the platform includes a data repository, spatial viewer, and application programming interfaces (APIs) for building, biodiversity and campus spatial data. The next steps will extend the data repository and API access for researchers to include transportation and waste data.

Early findings from this project indicate that UBC has an abundance of data, which creates an ideal opportunity for data-driven research and operational management on campus. However, it has also highlighted the increasing need for cross-campus collaborations and sharing of data so that the data platform can become an effective decision-making support tool and resource for new research.

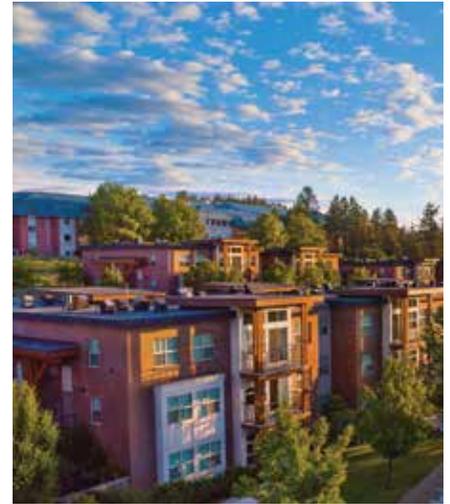


### Biodiversity monitoring at the UBC Farm

**|** In agroecosystems, biodiversity plays a critical role in food production and provides a variety of ecosystem services that benefit farmers and consumers. But how can biodiversity be assessed on a farm? What are the best indicators to assess the links between biodiversity, food production, and the sustainability of farming practices?

The Centre for Land and Food Systems at UBC Farm has developed a world-class long-term biodiversity monitoring program for agricultural landscapes. This program will help characterize biodiversity at the UBC Farm, understand how biodiversity is changing over time, how farm management impacts biodiversity, and how changes in biodiversity affect crop production and other important agricultural processes such as pollination, pest control, and soil fertility.

The program focuses on three key aspects of biodiversity at the UBC Farm: landscape/habitat diversity, crop diversity, and the “wild” or unplanned species diversity that provides numerous ecosystem services. It will ensure that the diversity of life at the UBC Farm – including plants, mammals, birds, bats, insects, and soil microorganisms – is consistently assessed and quantified each year.



### Planning Kelowna's first co-housing development

**|** Community housing is an old concept, but UBC Okanagan students are modernizing the idea with their creation of Kelowna's first co-housing development project: the Aviary.

Engineering and management students and their faculty supervisors are working on the concept, designs, and business model for the co-housing development. They also shared this idea, which they say will be an evolution in sustainable housing for the region, with the community in a public open house.

“Co-housing should not be confused with co-op, social or low-income housing,” says Gord Lovegrove, Associate Professor of engineering at UBC Okanagan and project leader. “The co-housing model typically involves 30 committed families who co-develop a property that clusters self-contained, smaller units around a central community dining and activity hall.”

Lovegrove says this community property helps to reduce costs and increases quality of life thanks to shared facilities like a community garden, social hall, craft room, workshop, toddler playroom and laundry.

## Research Projects



**Farm size in food system sustainability** | Are smaller farms more sustainable? Current research suggests that small farms (under 2 ha) produce 30-34% of the world's food on just 24% of gross agricultural area. Smaller farms are also known to have higher crop yields, devote a greater proportion of their production to food crops, and host higher crop and non-crop biodiversity. They are however, constrained by their per capita income.

Through interdisciplinary research, faculty members Navin Ramankutty, Hannah Wittman, and Jeanine Rhemtulla, along with students Vincent Ricciardi, Dana James, Zia Mehrabi and Postdoctoral fellow Christian Levers intend to learn more about sustainable food systems.

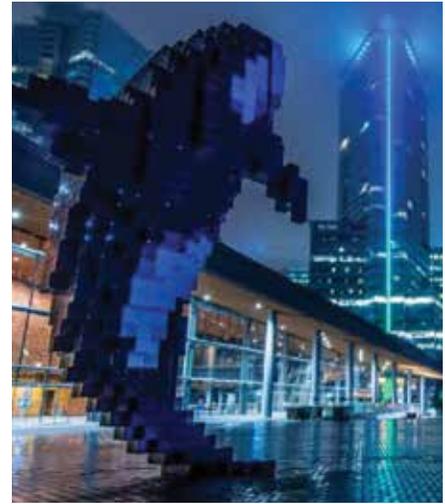
The research project will use large-scale geospatial analysis to examine the relationships between field size and farm size, management intensity, and environmental outcomes across large parts of South America. Field surveys and in-depth interviews will also be used to better understand the relationships between farm size and agroecological practices in Brazil – a key frontier of the agroecological movement globally.



**Built-in snowmelt system for solar panels** | Solar panels are a recognized way to harness renewable power from the sun. But in Canada and other northern climates, the effectiveness of solar panels in the winter months is reliant on removing obstacles like snow and ice. That is the challenge facing researchers from UBC Okanagan's School of Engineering.

Graduate students Remy Kennedy-Kuiper and Tharaka Wanniarachchi, guided by professors Shahria Alam, Rehan Sadiq, Kasun Hewage and Jian Liu, are pursuing a Mitacs-funded initiative in partnership with Create Green Consulting, a Kelowna-based sustainable energy industry partner.

The research project is seeking to develop a snow-melting system for solar panels that will provide electricity to a newly renovated home in Kelowna. The system will ensure that the solar panels are clear of snow and ice and will work year-round. The solar panels will also be used in combination with a recently-installed Building-Integrated Photovoltaic heating system.



**Getting to Zero Emissions** | The Zero Emission Building Exchange (ZEBx) is a collaborative knowledge hub that acts as a catalyst for the building industry in the transition to cost-effective, zero-carbon-emission buildings. As a ZEBx academic partner, the UBC Sustainability Initiative is developing programs that engage students in applied research to study emerging local strategies and global best practices and identify optimized and scalable solutions that can be implemented in buildings in BC.

Current projects include: (1) Zero Emission Buildings and Solutions Case Studies, which showcase the key features and lessons learned from high-performance buildings in B.C. and their technical zero-emission solutions; (2) NearZero Research Program, which collects data from the design, construction and operation of early-adopter, near-zero emissions buildings in the Lower Mainland for analysis and research.

The UBC Sustainability Initiative's partnership with ZEBx strengthens the exchange of knowledge between academics and industry, provides applied research opportunities for students, and allows UBC to use our experience in innovative sustainability-focused buildings to support regional climate change action.





# Operations and Infrastructure

As a large, research-intensive university, with considerable land, assets and utilities in Vancouver and the Okanagan, UBC is in a unique position to use our campuses as test beds for sustainability. Our goals are to enhance the efficiency of our operations, improve environmental performance, and achieve cost savings, while leveraging our campus infrastructure and built environment to demonstrate innovative sustainability solutions at a municipal scale.

## Energy and Emissions

UBC is pursuing ambitious greenhouse gas (GHG) reductions on both campuses. This year, our Climate Action Plan for the Vancouver campus resulted in 38 percent fewer GHG emissions than in 2007, while in the Okanagan our focus on sustainable design and building performance achieved a 29 percent reduction in absolute GHG emissions vs. 2017.

### UBC Vancouver

**UBC ranked #1 in the world for taking urgent climate action** | UBC was ranked the #1 university in the world under United Nations Sustainable Development Goal #13 for taking urgent action to combat climate change and its impacts, according to Times Higher Education (THE).

**Energy programs save UBC \$2.3M a year and nine percent in GHG emissions** | Building recommissioning and energy retrofits completed to date save the University \$2.3 million a year in operating costs, and have eliminated over nine percent of campus GHG emissions compared to 2007 levels. This year, the UBC Energy & Water Services group won the Association of Energy Engineers 'Institutional Energy Management Award' for energy conservation.

**Biomass energy expansion planned to reduce natural gas use** | Our Bioenergy Research and Demonstration Facility has been pivotal in reducing UBC's GHG emissions. Based on this success, we're planning to increase biomass energy production. The expanded facility will approximately half the system's current dependency on natural gas, and eliminate an annual average of 13 to 15 thousand tonnes of GHG emissions over the life of the project.

**Aircuity system installation reduces heating, cooling, and power needs** | UBC completed the first installation of an Aircuity system in BC. The system samples air for common contaminants, and provides airflow rates only at the levels needed to maintain air quality. As a result, heating and cooling needs are reduced, and less fan power is required – reducing energy costs by an estimated \$60,000 a year.



### UBC Okanagan

**District Energy System upgraded** | A district energy system (DES) provides ground-sourced energy to all academic buildings on campus. This year, the DES was upgraded to increase the system's cooling capacity, and expanded to include the new Commons library – designed to rely solely on the DES for heating. These upgrades significantly reduced the campus' consumption of natural gas and associated greenhouse gas emissions.

**Buildings recommissioned to improve ventilation, reduce energy use** | Building recommissioning projects were implemented in a number of buildings to support energy and GHG emissions reductions. Improvements made last year resulted in improved building ventilation, reduced energy consumption, and improvements in cold weather operation.

**Net Zero Carbon District Energy Strategy and Climate Action Plan** | A Net Zero Carbon District Energy Strategy is being prepared to guide future district energy system development and investments. In addition, UBC Okanagan is also developing a specific Climate Action Plan. The plan will ensure a proactive response to climate change that minimizes GHG impacts and helps prepare the campus for future adaptation measures.

# 53%

reduction in GHG emissions per student since 2007 (Vancouver)



# 50%

reduction in GHG emissions per student FTE since 2013 (Okanagan)

# Trends



reduction in absolute GHG emissions since 2007 (Vancouver)

2050 target = 100% reduction



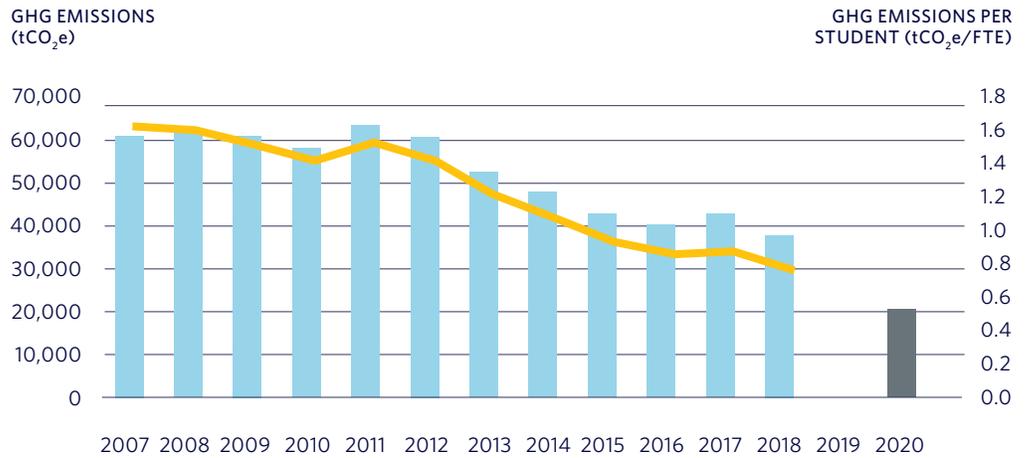
reduction in absolute GHG emissions since 2013 (Okanagan)

Goal: Achieve a net positive performance in operational energy and carbon by 2050

## GHG Emissions / Student FTE

Vancouver Campus

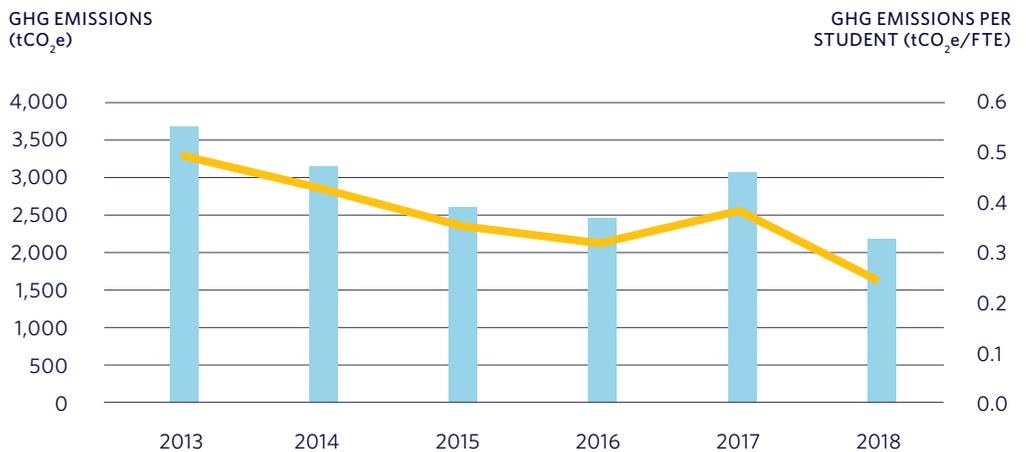
- Absolute GHG Emissions (tCO<sub>2</sub>e)
- GHG Emissions per Student (tCO<sub>2</sub>e/FTE)
- Target



## GHG Emissions / Student FTE

Okanagan Campus

- Absolute GHG Emissions (tCO<sub>2</sub>e)
- GHG Emissions per Student (tCO<sub>2</sub>e/FTE)



# Water

Efficient water use, greater resilience in the face of increasing drought periods, and effective management of heavy rainfall events are important goals at UBC. Multiple departments are collaborating to address these issues through development of new and better tools for metering and analyzing consumption, improving the efficiency of buildings and infrastructure, and engagement programs.



## UBC Vancouver

**Water Action Plan approved and underway** | Our new plan targets a reduction in water use per student FTE of 2% per year. Action areas include metering and reporting, landscape and irrigation, alternative water sources, drinking water, and campus engagement. This year SEEDS student research projects analysed campus water metering data, piloted wayfinding signage for water fountains, and evaluated new locations for water fountains.

**District Energy System water efficiency improved** UBC's new hot water Academic District Energy System (ADES) uses 2000 times less water than the steam system it replaced. The hot water system is closed loop with a leak detection system to prevent water loss, and closures to the outstanding legacy sections of the steam system will enable further energy and water savings in the future.

**Stormwater management plan reviewed** | This year a new storm model was generated by Metro Vancouver to support adaptation to climate change within the region's sewerage and drainage infrastructure. UBC reviewed this model and will incorporate findings into the design of future stormwater management systems. In addition, 16 SEEDS research projects explored ideas for building community and ecological resilience via thoughtful stormwater management.

## UBC Okanagan

**Reduced irrigation, drought tolerant landscaping** In alignment with UBC Okanagan's updated Design Guidelines, the campus continued to incorporate indigenous and drought tolerant plants in landscaping across campus. This reduced irrigation requirements and strengthened local ecology and biodiversity. Additional measures implemented to reduce water consumption included irrigation system upgrades for improved scheduling control, and sustainable landscape practices - such as the incorporation of leaf mulch in soils.

**New terraced raingardens, bioswales** | Our Integrated Rainwater Management Plan (IRMP) includes the application of Low Impact Development (LID) facilities such as raingardens and bioswales that achieve rainwater management with ecological and social co-benefits. New LID applications across campus, including bioswales and a terraced raingarden adjacent to the Commons library, were designed to achieve the IRMP's minimum retention requirements while providing a valuable social amenity.

**68%**  
reduction in water use  
intensity per student since  
2000 (Vancouver)



**27%**  
reduction in water use  
intensity per student since  
2013 (Okanagan)

# Trends



reduction in absolute water consumption since 2000 (Vancouver)

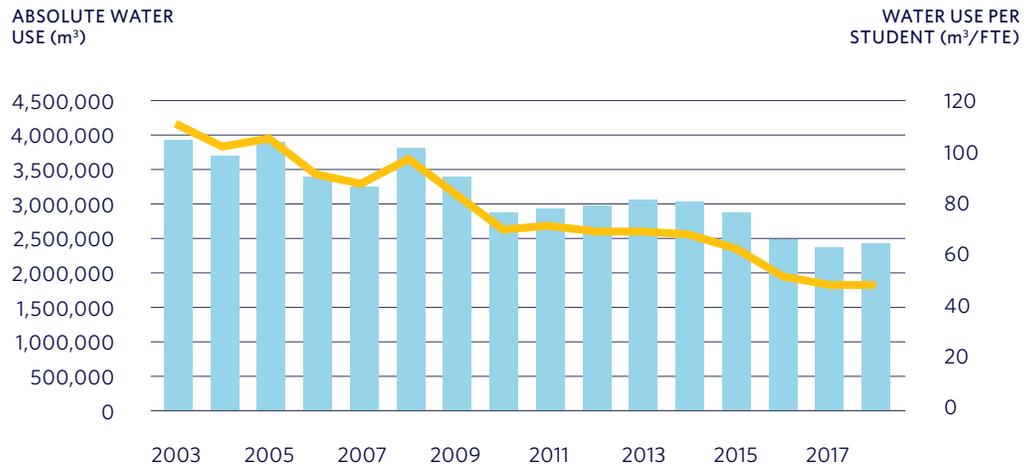


reduction in absolute water consumption since 2013 (Okanagan)

## Water Use

Vancouver Campus

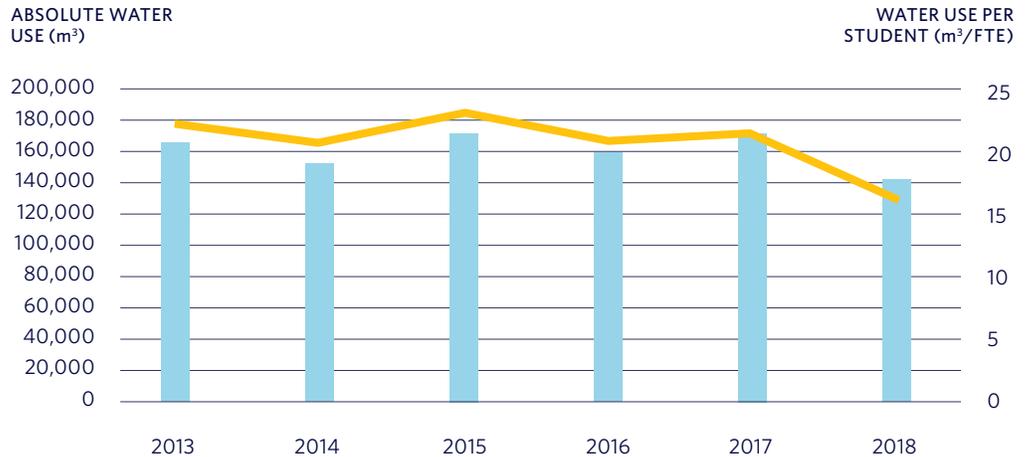
- Absolute Water Use (m<sup>3</sup>)
- Water Use per Student (m<sup>3</sup>/FTE)



## Water Use

Okanagan Campus

- Absolute Water Use (m<sup>3</sup>)
- Water Use per Student (m<sup>3</sup>/FTE)



## Waste and Materials

UBC's Zero Waste Action Plan targets 80 percent overall waste diversion by 2020, and both campuses are striving towards full waste recovery and reuse by 2050. Doing so will require innovation and strategic partnerships, plus the commitment of the whole campus community through campus engagement, behaviour change programs, and awareness building activities.

### UBC Vancouver

**Zero Waste Food Ware Strategy** | UBC Vancouver generated approximately 1.7 million disposable coffee cups last year, along with other single use food ware items such as plastic straws and cutlery. In consultation with food services stakeholders and the City of Vancouver, UBC has drafted a Zero Waste Food Ware Strategy, informed by SEEDS research spanning multiple disciplines, to explore reducing single use items, increasing composting and recycling rates, and decreasing compost contamination.

#### Student-led Mugshare program launches on campus

After two years of development, UBC's student-led Refill Initiative team launched Mugshare. This innovative program allows customers to check out reusable mugs from many cafes on campus and return them when they're done. Mugshare is currently spreading beyond campus into outlets across Vancouver and Whistler.

**Reuse pilot launched in student residences** | A pilot to enhance donation sorting and reuse of items was conducted in Walter Gage residence. Students from the Zero Waste Squad helped identify items suitable for reuse and resale from the donation room. Overall, 50 boxes of items were collected and resold to incoming students, reducing landfill waste and promoting a circular economy.

**New outdoor recycling stations** | This year we began installing new outdoor recycling stations. These multi-stream stations allow users to separate recycling and composting, and their extra-large capacity reduces collection truck trips.



### UBC Okanagan

**Waste reduction engagement program** | Awareness and education programs held last year were designed to address low cost, high impact opportunities identified by campus waste audits. Key behavior change campaigns focused on eliminating or recycling paper cups, lab waste diversion, and improving recycling compliance. As a result, our fifth Bi-Annual Waste Audit demonstrated a 13 percent improvement in recycling compliance compared to 2016.

**Recycling station upgrade** | Recycling stations across campus were updated last year to improve sorting behaviours and recycling compliance. Content and visual updates to recycling signage were also made to improve clarity, and to ensure consistency for end users across campus.

**PaperCut™ reduces paper waste** | UBC Okanagan introduced PaperCut™, a user-driven, online based printing program in 2016. The program is targeted to reduce paper use, associated GHG emissions, and printing costs. Since 2017, the program has achieved a 63 per cent reduction in paper use.

40,000+

fewer coffee cups  
used following 25¢ fee  
(Vancouver)



14%

increase in waste  
diversion rate since  
2010 (Okanagan)

# Trends



overall waste diversion rate (Vancouver)

2020 target = 80% waste diversion rate



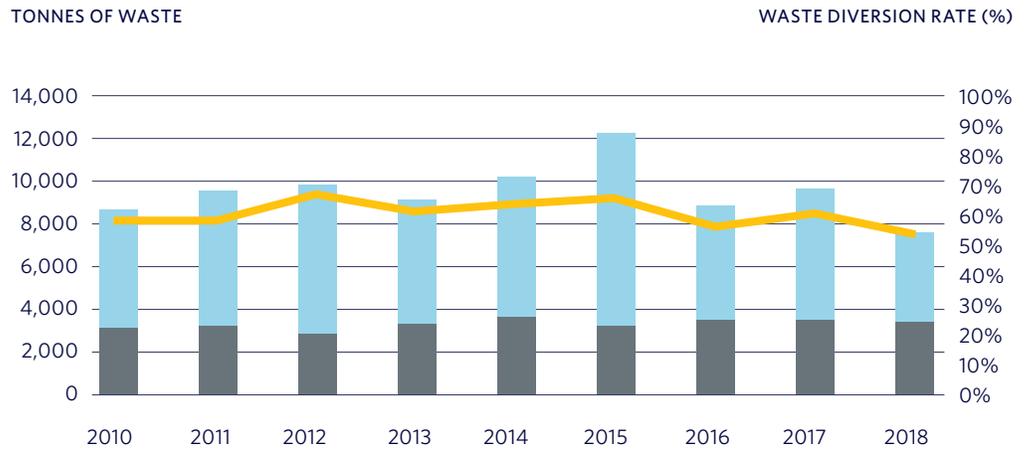
overall waste diversion rate (Okanagan)

Goal: Strive towards full waste recovery/reuse

## Waste Diversion and Disposal

Vancouver Campus

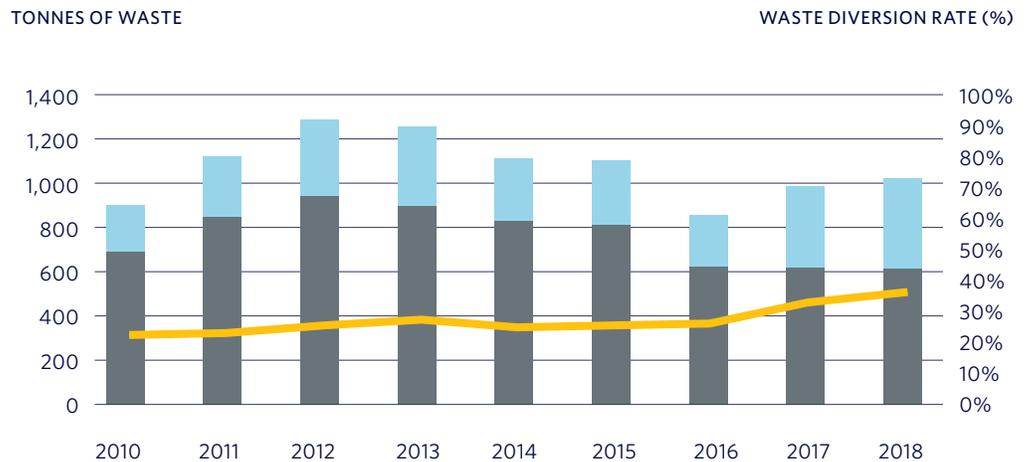
- Operational Waste sent to Landfill (tonnes)
- Waste Diverted (tonnes)
- Overall Waste Diversion Rate (%)



## Waste Diversion and Disposal

Okanagan Campus

- Operational Waste sent to Landfill (tonnes)
- Waste Diverted (tonnes)
- Overall Waste Diversion Rate (%)



## Green Buildings

UBC buildings create an exceptional environment that provide sustainable, healthy places for teaching, learning and research, and places to socialize, live and play. Our Vancouver campus Green Building Action Plan commits us to the vision that by 2035, UBC buildings will make net positive contributions to human and natural systems. While in the Okanagan our Whole Systems Infrastructure Plan (WSIP) supports greater energy efficiency, low carbon district energy system expansion, and climate adaptive design guidelines.



### UBC Vancouver

**Green Building Action Plan** | The goal-oriented action plan works across eight interconnected areas of building design: energy, water, materials and resources, biodiversity, health and wellbeing, quality, climate adaptation, and place and experience. Ambitious goals, targets, and actions for each component will follow a cycle that encourages evaluation and improvement throughout implementation.

**UBC's REAP Lowers Building Energy use** | UBC's Residential Environmental Assessment Program (REAP) is designed to help reduce residential buildings' environmental impact over time. Updated in September 2018 to align with the Province's Energy Step Code, REAP buildings have 27% lower energy use than average for high rise buildings in the lower mainland.

**UBC Aquatic Centre International Recognition** | UBC's LEED Gold certified Aquatic Centre has been internationally recognized for being designed to save approximately 2.7 million litres of water annually through rainwater harvesting.

**Campus Energy Centre Wins RAIC Award** | The Campus Energy Centre has won national recognition for its leading-edge sustainable design from the Royal Architectural Institute of Canada.

### UBC Okanagan

**Skeena Residence Wins CleanBC Better Buildings Award** | Leading best practices in energy efficient building design, UBC Okanagan's new Skeena Residence was one of eleven building projects in BC to be awarded the Provincial CleanBC programs' Net-Zero Energy Ready Challenge Design and Construction Incentive awards. Currently under construction, the 220-bed student residence project will be UBC's first Passivehaus development.

**The Commons Library Expansion** | Completed in 2018, the Commons Library expansion was developed to achieve LEED Gold certification. The facility has also been designed to rely solely on the campus' low carbon district energy system for heating, and will manage 100 per cent of the rainwater on-site.

**Nechako: Student Residence and Commons Building** | Designed to become the campus' 4<sup>th</sup> LEED Gold certified building, this mixed-use facility will add 220 student resident units, a 500-seat dining hall, and 24-hour access to quiet study space and social amenities.

**Updated Campus Design Guidelines** | The guidelines are a reference tool for the design of all future facilities at UBC Okanagan. Informed by consultation with the campus community and technical staff, the guidelines reinforce and supplement the Whole Systems Infrastructure Plan, and support resiliency to future changes in growth, utility rates and climate change.

20

LEED certified buildings  
(Vancouver)



12

Buildings connected to Low  
Carbon District Energy  
System (Okanagan)

# Trends

63%

less energy used by LEED Gold certified Campus Energy Centre (Vancouver)



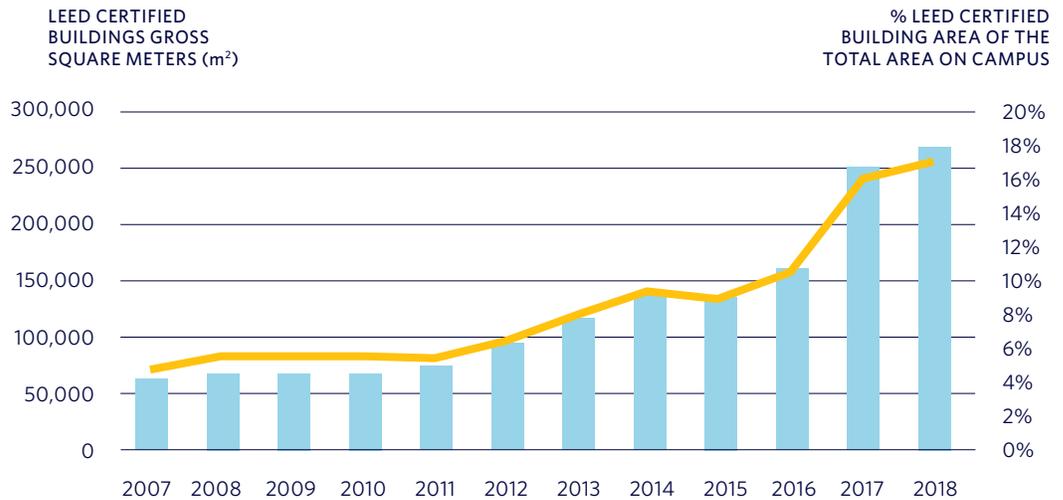
14%

less energy used by buildings since 2013 (Okanagan)

## Green Buildings

Vancouver Campus

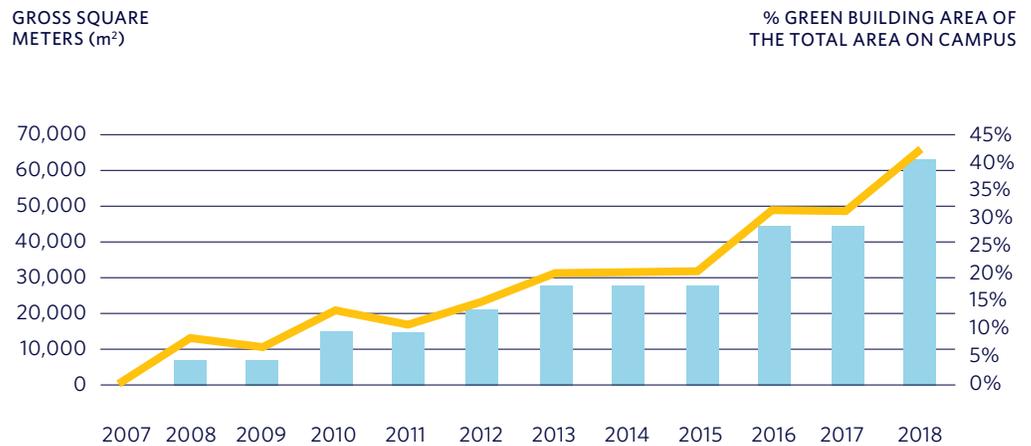
- Total area of LEED certified buildings (m<sup>2</sup>)
- Percentage LEED certified building area of the total area on campus



## Green Buildings

Okanagan Campus

- Total Green Building Area (m<sup>2</sup>)
- Percentage green building area of the total area on campus



## Stories



**Reducing single use coffee cups** | UBC Food Services encouraged customers to use reusable cups through discounts. But the results were unimpressive. So they decided to test what would happen if instead of offering a 15¢ discount for people who bring their own reusable mug, they charged 25¢ to people who use a paper cup.

Starting in September 2018 at four retail locations on campus, UBC Food Services lowered the standard advertised cost of a hot drink by 25¢ to show the price customers pay if they bring their own reusable cup. This helped show that the change did not increase the price of the drink, but fairly reflected the economic and environmental cost of the cup.

Project tactics included menu updates, counter signs, social media, and selling reusable mugs from the UBC Bookstore. Results so far demonstrate that reusable cup usage increased from under 6% to nearly 18%, reducing single use cups by over 40,000.



**Indian Residential School History and Dialogue Centre** | The Indian Residential School History and Dialogue Centre is located in the heart of the UBC Vancouver campus between the Koerner and Irving Barber Library. The facility will be integrated into a revitalization of the landscape precinct which is targeting sustainable sites certification, a rating system for landscape design.

The building design responds to all eight component areas of the Green Building Action Plan, strongly supporting biodiversity through landscape design, and representing place and experience through its symbolic location and architectural design. Together the building and landscape create a special space that symbolizes an important moment on the pathway to reconciliation in Canadian history.



**čəsnaʔəm house in Totem Park certified LEED platinum** | This new residence was certified LEED Midrise (Homes) Platinum in 2018 — the highest rating possible. Taking its cue from the adjacent woods, the new 354 bed student residence building uses irregularly patterned and coloured brickwork to reference a stand of Douglas Fir.

Through consultation with students, the buildings includes shared washrooms that balance the needs of gender fluid users with other occupants, and universal physical accessibility for every room.

Social spaces and kitchens operate at the individual, floor, and house scales during the academic year, while accommodating diverse groups of conference attendees during the summer season.

## Stories



**District Energy System optimization, modeling, simulation** | The multi-year transformation of UBC Vancouver's energy system from steam to hot water through the Academic District Energy System (ADES) halved natural gas use. The project improved energy efficiency by more than 24 per cent, saves 270 million litres of water per year, and was instrumental in enabling UBC to achieve our 2015 greenhouse gas emissions reduction target. But installing the system was just the first step.

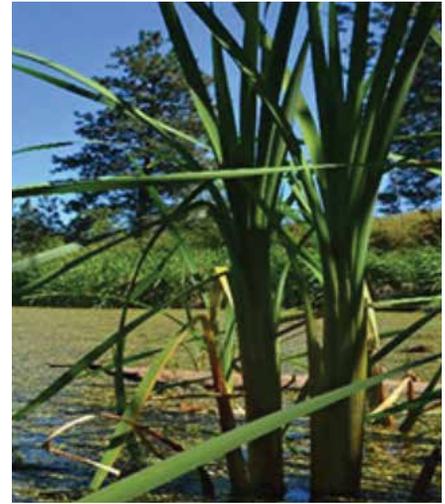
Now UBC is focusing on continual optimization to improve performance. In 2018, a computational fluid model of the ADES was created in Termis: a real-time district energy optimization software. The model enables UBC's Energy & Water Services team to improve service, minimize losses, plan expansions, and create what-if scenarios to understand areas of vulnerability in the system, increasing resiliency. The ADES model has now been connected to real-time plant and building data, allowing UBC Energy & Water Services engineers to monitor the system in real-time and optimize performance effectively.



**Open access data identifies potential new savings** | UBC Energy & Water Services makes water and energy data available online via the SkySpark platform. Students, researchers, and UBC energy managers can use this data to identify and track energy and water saving projects, compare the performance of different types of buildings, and evaluate best practices in new building construction.

Working with UBC staff, Aina Crozier, a PhD student in Civil Engineering, ran extensive analyses of Skyspark data to better understand and compare the water consumption patterns of UBC buildings. The analysis was able to identify buildings with significant night-time flows which are not related to common uses such as faucets or toilets. In another study Aina used the data to assess water consumption in an aquatic research lab, and to identify potential ways to increase efficiency of the lab systems.

By making this data open and accessible, new research and fresh ideas are helping UBC further improve water efficiency on campus.



**UBC Okanagan Campus Pond** | To passersby, the campus pond is a natural, thriving, ecologically diverse community of plant, mammal and reptilian life. To our engineers, it is essential infrastructure for rainwater retention, filtering and removing pollutants through evaporation and natural biological processes.

As a result of continued campus growth, the pond is currently at capacity and unable to handle additional water flow from new developments. The Integrated Rainwater Management Plan (IRMP) was developed to respond to this situation, and requires each new development project to manage rainwater on-site.

Together, the pond and the IRMP achieve 100% diversion of rainwater from municipal systems, meeting regulatory requirements and safeguarding campus infrastructure from flood risks, all while achieving significant ecological and social benefits.



# Community

UBC is home to a growing community of people that live, work, learn and take part in all that UBC has to offer. Each year, we design and deliver quality programming and events that leverage our world-class assets and public spaces to build connections and partnerships that support a vibrant campus community. Our goal is to foster an inclusive and welcoming campus environment by sparking imagination in all of our community members so they too, feel inspired to get involved in building community on campus.

## Community Programs

UBC is an extraordinary place because of the diversity of people that study, teach, work, and live in our community. Through programming, partnerships, and capacity building we seek to elevate, celebrate, and recognize the many unique and diverse members of our community. Together we can build and nurture a more inclusive and vibrant UBC that promotes wellbeing for all.

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### UBC Vancouver

**UBC ranked #1 university in Canada for making communities inclusive, safe, resilient and sustainable** | UBC was ranked #1 university in Canada under United Nations Sustainable Development Goal #11 for making communities inclusive, safe, resilient and sustainable, according to Times Higher Education (THE).

**Celebrating Pride in style** | On August 1<sup>st</sup> UBC kicked-off Vancouver Pride with a celebration of diversity, inclusion, and UBC's Positive Space campaign. The event featured a partnership with Vancouver's Public Disco, a pop-up queer library, slam poetry, a live mural painting, and a drag show featuring UBC's own drag queen talent.

**Kids Take Over UBC!** | Young volunteers from the UBC community took on adult-sized roles to help host an exciting day of arts and culture activities. Over 1,000 people attended events including a Theatre Lab at the Frederic Wood Theatre, Culture Kids at the Museum of Anthropology, instrument petting zoo at the School of Music, and tours of the Longhouse with the First Nations House of Learning and local Musqueam students.

**Turning Up on International Women's Day** | UBC's new event — Turn it Up, Disrupt — helped mark and celebrate International Women's Day. The event, funded in part by the Equity Enhancement Fund, featured three days of creative and bold programming that included performances, workshops, exhibitions and presentations that celebrate all women, including trans women, and members of historically and traditionally marginalized communities, including LGBTQ2SIA+, Indigenous, newcomer and refugee, and people with disabilities.

**UBC Family Health and Resource Fair @ Acadia Park** | The fair at Acadia Park is an informative, fun, and inclusive community event that celebrates diversity and encourages learning. Service providers in the areas of health, safety, childcare, early childhood development, and newcomer support were on hand to provide resources for families with children 0-6 years old. While parents received valuable information, children participated in fun activities like face painting.



**UBC unveils inclusive Pride installation** | Last year, UBC took the wraps off its first Pride installation located at the centre of the Vancouver campus. The installation depicts a pride rainbow with trans pride flag colours, as well as black and brown stripes that show support for inclusion and recognize the diversity, intersectionality, and leadership of historically marginalized community members within, and beyond, the LGBTQ2SQA+ movement. It is painted on a large concrete wall outside the AMS Nest, overlooking the University Commons plaza. The project was funded by the graduating class of 2018 as a gift to the university community.

The location and the design were informed through community feedback online, and at UBC's own Pride celebration event. An advisory committee composed of students, faculty, and staff also helped inform the overall project. The UBC Pride Installation is a permanent symbol of the university's commitment to building an inclusive campus community, and signals that UBC is a positive space for everyone.

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# 45

community projects supported through UTown@UBC Community Grants

# 47

student-led SEEDS projects focused on building community at UBC

# 800+

participants in monthly Beaty Biodiversity Museum's Nature Club

# 1,000+

attended Kids Take Over UBC! community activities

# Transportation

As British Columbia’s largest university across two main campuses, UBC is a destination for students, staff, faculty, neighbourhood residents, alumni and citizens from communities across the region. UBC is focused on providing safe and enjoyable sustainable transportation choices to, from, and around campus, in particular by reducing automobile trips, supporting public transit, and promoting active transportation.

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## UBC Vancouver

**SkyTrain to UBC endorsed by Regional Mayors** | The City of Vancouver Council and TransLink’s Mayors’ Council on Regional Transportation endorsed a SkyTrain extension of the Millennium Line as the basis for future planning of rapid transit to UBC Vancouver.

**Walk N’ Roll program expanded** | The Walk n’ Roll program promotes active and sustainable transportation to local elementary schools. This year the program expanded via volunteers offering to run walking school buses or bike trains from new neighbourhoods.

**Wayfinding for cyclists installed** | New wayfinding signs were installed to help cyclists find key destinations on campus, draw cyclists out of pedestrian priority zones, and help them enjoy a faster trip.

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## UBC Okanagan

**New campus entrance, bike lane, transit, overpass** | The John Hindle Drive extension project provides alternative access to campus from the west. A new access road was also built that includes a multi-use pathway and bike lanes, and a new pedestrian overpass was built across John Hindle Drive to connect the campus to the south. Together, these improvements provide enhanced access for all modes of transportation including transit, relieving congestion on the east side of the campus.

**Expanded electric vehicle charging** | Adding to the capacity provided by standard charging points, six new Level 2 chargers were installed, identified by the blue charging stations, signage, and painted EV markings.

**New cycling routes, bike storage** | A number of new cycling routes connecting the campus to neighbouring communities were completed last year. In anticipation of increased demand, we increased bike storage to 452 – adding 55 two-bike racks and eight secure bike lockers in under serviced areas around campus.



**Campus Bike Share Pilot** | In summer 2018, Dropbike began operating a “dockless” bike share program at UBC under a one-year pilot agreement. The test successfully demonstrated the potential for a campus bike share program to reduce on-campus travel times, improve access to services and amenities, support campus and community wellbeing, and serve as a first-/last-mile connection to transit.

Throughout fall 2018, the system saw an average of approximately 300 trips per day with usage from a broad range of students, faculty, staff, visitors and neighbourhood residents. In support, a number of SEEDS applied research projects investigated how the provision of bikeshare impacts the need and availability of bike storage.

As the first dockless bike share program in the region, the pilot used the campus as a test-bed for a new sustainability solution. Now UBC can share valuable findings with municipal governments considering similar programs, and will inform TransLink’s development of regional bikeshare program guidelines.

53%

of all trips to and from campus were made by transit (Vancouver)

66%

of all trips were made by sustainable modes of transportation (Vancouver)

69%

increase in Bike To Work Week participation (Okanagan)

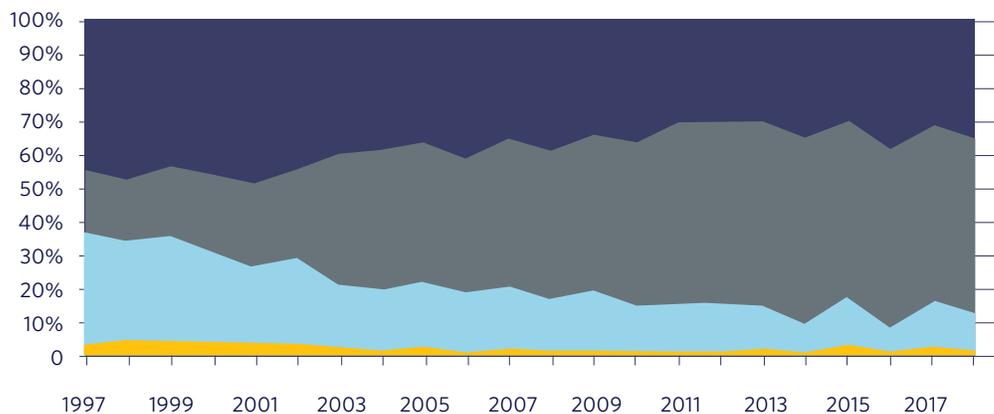
62%

of all trips were made by sustainable modes of transportation (Okanagan)

# Trends

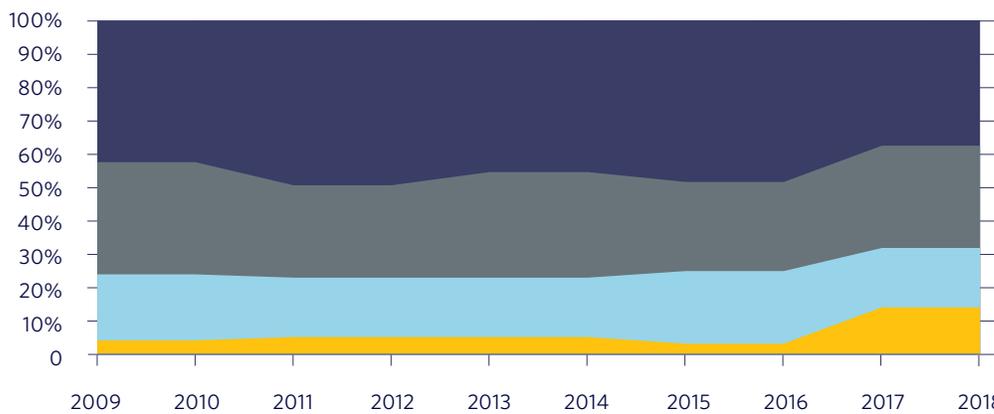
## Transportation Vancouver Campus

- Single Occupancy Vehicle
- By Transit
- Carpooling
- Walking and Cycling



## Transportation Okanagan Campus

- Single Occupancy Vehicle
- By Transit
- Carpooling
- Walking and Cycling



## 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, and open spaces within our neighbourhoods and academic spaces. Driven by UBC's vision to be a world-class community of scholars with access to a beautiful, functional, and sustainable campus, we are committed to increasing housing choices and growing amenities.

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### UBC Vancouver

**Child Care Expansion Plan — new spaces** | The UBC Child Care Expansion Plan aims to create an inventory of approximately 1,200 spaces by 2041, with a focus on new spaces for children under 3 years of age. The plan reflects a balanced and sustainable approach to child care expansion: balancing quality of service with growing demand.

Last year the University Neighbourhoods Association opened a 24-space school age care program in the Old Barn Community Centre, and added a 15-space school age program in the Wesbrook Community Centre. In addition, three new modular buildings in Acadia Park and the new Wesbrook Childcare Centre are in development. These projects will add up to 149 new child care spaces.

**Housing Action Plan on track** | UBC's Housing Action Plan is the University's strategy for improving housing choice and affordability for faculty, staff and students. Highlights of the Housing Action Plan implementation this year include:

- UBC is on track to deliver more than 2,000 new student housing beds from 2019-2025
- The UBC Exchange, a new mixed-use student residence and bus terminal, will open in September 2019, providing 630 new student housing beds and supporting UBC's 52% transit mode split
- Construction of 156 affordable rental units for UBC faculty and staff is underway in Wesbrook Place, and an additional 243 rental units will be made available to UBC community students, faculty and staff

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### UBC Okanagan

**Increasing student housing and childcare spaces** | The Nechako Housing Commons and Skeena Residence, currently under construction, will increase student housing from 1,670 beds to just over 2,100 beds by 2021. In addition, upcoming renovations to UBC Okanagan's existing childcare facility will add 20 new spaces by fall 2020.



**Stadium Neighbourhood** | Creating new communities on campus is one way UBC helps to reduce commutes, diversify the campus experience, and demonstrate leadership in sustainable development. UBC Vancouver's Stadium Neighbourhood is an opportunity to complete the south campus, connect destinations, and create a next-generation sustainable community.

Phase 3 of Stadium Neighbourhood public consultation took place in fall 2018. Two neighbourhood plan options were presented. This phase informed the public about the options, highlighted similarities and differences, gathered feedback, and communicated the next steps for our neighbourhood planning process.

Stadium Neighbourhood demonstrates UBC's leadership on an important institutional and regional challenge. The plan focuses on expanding affordable housing by dedicating up to two-thirds of the neighbourhood to the UBC community. It also considers community service levels, including school space, retail (including grocery stores), child care capacity, and how to strengthen our important relationship with the Musqueam community.

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# 39

more school-age spaces operated by the YMCA

# 149

new child care spaces in development (Vancouver)

# 156

additional below-market rental units under construction (Vancouver)

# 1,000+

additional student beds coming soon (Vancouver + Okanagan)

## Wellbeing

A collaborative effort to make UBC a better place to live, work and learn through an interconnected approach to wellbeing across our campuses. Guided by the Okanagan Charter, our work is focused on six priority areas: Collaborative Leadership, Mental Health & Resilience, Food & Nutrition, Social Connection, Built & Natural Environments and Physical Activity.

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### UBC Vancouver

**UBC Wellbeing strategic initiatives fund** | To promote collaborative work in priority areas, last year UBC Wellbeing offered strategic funds to units and departments.

Funded projects included a Musqueam multi-sport program for kids led by UBC Kinesiology's Active Kids; a Community Kitchen at the UBC Farm; the Artivism Festival, coordinated by the Arts and Culture District, and a Harvesting Food Skills Workshop at the UBC Botanical Garden to engage AMS Foodbank clients in developing food and nutrition skills related to growing, harvesting, preparing and sharing foods, and supporting biodiversity.

**UBC Drinks Tap Water** | As part of the Healthy Beverage Initiative at UBC, the Food and Nutrition Committee teamed up with Student Housing and Hospitality Services to roll out "UBC Drinks Tap Water" across both campuses. The campaign aimed to educate community members about the benefits of drinking tap water, and dispel misconceptions that bottled beverages are better.

**Wellbeing in learning environments** | A three-year research project, funded by the Teaching Learning Enhancement Fund is exploring strategies that promote academic tenacity and students' ability to thrive in rigorous academic environments. Now in year two, this project saw faculty members from multiple disciplines at UBC Vancouver implement and assess approaches to support student wellbeing in the classroom.

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### UBC Okanagan

**Addressing food security on campus** | At UBC Okanagan, the VOICE 4 research project found that 42% of students were sometimes or often worried that food would run out before they got money to buy more. To address this, the Food Insecurity Baseline and Action Plan Project is working on food insecurity reduction targets, advocacy, and program activities.



**Growth mindset, self-regulation, and social connection** | A student's wellbeing is critical to their academic success. So UBC faculty are exploring ways to increase academic tenacity and support student wellbeing through a three-year research project funded by the Teaching and Learning Enhancement Fund. Academic tenacity is comprised of three components: growth mindset, self-regulation, and social connection.

Students in Dr. Karen Smith's first-year Biology class are encouraged to take part in activities outside the classroom; in doing so, they build stronger connections to the campus community and successfully develop self-regulation learning strategies. In the Faculty of Applied Science, Dr. Agnes D'Entremont's second-year mechanical engineering cohort is learning how to effectively handle stress through mental health literacy embedded into their course curriculum. And in the Faculty of Education, Dr. Carolyn McEwan teaches a Kinesiology statistics course where self-compassion strategies are taught to help students with emotional regulation.

Supported by the Health Promotion and Education unit, the final year goal is to integrate practices and strategies to support student wellbeing across the university.

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# 27

wellbeing projects supported through strategic initiatives fund

# 10

years of Thrive Week supporting mental health at UBC

# 6

SEEDS research projects explored food insecurity among students

# 57%

of student respondents more likely to choose tap water following campaign

# Performance Data

VANCOUVER CAMPUS			
METRICS	2018/19	Cumulative data	Cumulative since
<b>TEACHING, LEARNING AND RESEARCH</b>			
<b>Academic Courses &amp; Programs</b>			
Sustainability-related degree programs (#)	47	-	n/a
Sustainability-related courses (#) (Vancouver)	687	-	n/a
Sustainability-related courses (#) (Okanagan)	115	-	n/a
Departments with sustainability-related courses (%)	68%	-	n/a
<b>Research</b>			
Faculty researching sustainability-related topics (#)	374	-	n/a
<b>Sustainability Curriculum Grants</b>			
Grants awarded (#)	6	33	2010
Funds awarded (\$)	43,613	272,613	2010
<b>Sustainability Fellowship Program</b>			
Faculty Fellows (#)	12	36	2010
Departments with participating faculty (#)	10	22	2010
<b>Sustainability Scholars Program</b>			
Graduate student internships (#)	67	281	2010
Partner organizations (#)	12	19	2010
<b>Sustainability Ambassadors</b>			
Student members (#)	16	110	2012
Attendees at Ambassador events (#)	1,746	6,236	2012
Student-generated funding received (includes in kind) (\$)	11,991	47,780	2012
<b>Student Sustainability Council</b>			
Student-led groups (#)	26	122	2010
<b>Student Sustainability Network</b>			
Student members (#)	126	248	2017
<b>SEEDS</b>			
Participants (students, faculty, staff, and community partners) (#)	898	9,391	2001
Applied research projects (#)	90	1122	2001
Research reports (#)	167	1882	2001
UBC sustainability plans and policies advanced (#)	28	-	n/a
<b>Campus Engagement</b>			
Sustainability Coordinators (# in offices and labs, Vancouver Campus)	120	-	n/a
Power of You (# volunteers, Okanagan Campus)	23	-	n/a
<b>Community Engagement</b>			
Sustainability tours conducted (#)	173	-	n/a
Sustainability tour participants (#)	2,680	-	n/a
<b>Digital Engagement</b>			
Website page views (#)	269,141	-	n/a
Website users (#)	74,524	-	n/a
Facebook likes (#)	3,925	-	n/a
Twitter followers (#)	11,800	-	n/a
Instagram subscribers (#)	2,563	-	n/a
Newsletter subscribers (#)	2,737	-	n/a

- On track/continued progress made.
- Monitor/explore opportunities for improvement.
- Attention required/advance process.

# Performance Data

METRICS	VANCOUVER CAMPUS			OKANAGAN CAMPUS		
	2018/19	Trend	Baseline	2018/19	Trend	Baseline
<b>CONTEXT</b>						
Staff and Faculty Employees (FTE)	13,210	+25%	2007	1,178	86%	2007
Student Enrollment (FTE)	49,624	+32%	2007	8,732	114%	2007
Institutional Floor Space (m <sup>2</sup> )	1,599,380	+21%	2007	148,492	106%	2007
<b>OPERATIONS AND INFRASTRUCTURE</b>						
Campus Total GHG Emissions (tCO <sub>2</sub> e) Target (UBCV): 67% by 2020; 100% by 2050	37,941	-38% ●	2007	2,153	-41% ●	2013
Campus Total GHG Emissions, Buildings Only (tCO <sub>2</sub> e)	36,606	-37% ●	2007	1,957	-35% ●	2013
GHG Emissions per student (tCO <sub>2</sub> e/student FTE)	0.76	-53% ●	2007	0.25	-54% ●	2007
GHG Emissions per floorspace (tCO <sub>2</sub> e/m <sup>2</sup> )	0.024	-49% ●	2007	0.015	-52% ●	2007
Campus Energy Sources for Buildings in GJ (%)						
Natural Gas	40%	-24%	2007	26%	-	-
Electricity	44%	8%	2007	73%	-	-
Biomass/Propane/Diesel	B=10%	10%	2007	P=0.09%	-	-
	D=1%	1%	2007	D=0.17%		
Renewable Natural Gas	5%	5%	2007	0.06%	-	-
Campus Building Energy Use (GJ)	1,650,708	-4% ●	2007	140,857	-14% ●	2013
Campus Building Energy Use Intensity (GJ/m <sup>2</sup> )	1.06	-20% ●	2007	0.95	-21% ●	2013
Absolute Water Use (m <sup>3</sup> )	2,414,397	-49% ●	2000	141,628	-14% ●	2013
Water Use Intensity (m <sup>3</sup> /student FTE)	49	-68% ●	2000	16	-27% ●	2013
Overall waste diversion rate (%) Target (UBCV): Increase overall waste diversion rate by 80% by 2020	54%	-5% ●	2010	36%	14% ●	2010
Operational waste disposed (tonnes) Target (UBCV): Achieve a decreasing trend in operational waste disposed to landfill/incineration despite forecasted campus growth	3,458	11% ●	2010	618	-13% ●	2010
Annual waste disposed (tonnes)	3,613	7% ●	2010	718	2% ●	2010
LEED Projects (# Certified)	20	-	n/a	2	-	n/a
REAP Projects (# Certified)	31	-	n/a	1	-	n/a
<b>COMMUNITY</b>						
Transportation Mode Share						
Trips to/from campus by single occupant vehicle (SOV) (%)	33%	+4.6% ●	1997	38%	-5% ●	2009
Trips to/from campus by transit, carpool, cycling and walking (%)	66%	+62% ●	1997	62%	5% ●	2009
Trips to/from campus by transit only (%)	53%	+192% ●	1997	31%	-4% ●	2009
Trips to/from campus per person by public transit only (#)	76,600	+303% ●	1997	5,975	5% ●	2009
Student beds (#) Target: Build up to the capacity for SHHS-operated housing in the Academic lands	11,795	n/a	n/a	1,676	73%	2007
Faculty and Staff Housing (# of total units)	686	+16%	2014/2015	-	-	-
Child Care (# of total spaces)	814	+42% ●	2014/2015	36	0%	2013



**Connect with UBC Sustainability**

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