

CARBON NEUTRAL ACTION REPORT

April 2019



CAPILANO
UNIVERSITY

EXECUTIVE SUMMARY

Emissions and Offsets Summary Table

Capilano University GHG Emissions and Offsets for 2018 (tCO ₂ E)	
GHG Emissions Created in Calendar Year 2018:	
Total Emissions (tCO ₂ E)	1,475 tCO ₂ E
Total Offsets (tCO ₂ E)	1,475 tCO ₂ E
Adjustments to GHG Emissions Reported in Prior Years:	
Total Emissions (tCO ₂ E)	22 tCO ₂ E
Total Offsets (tCO ₂ E)	22 tCO ₂ E
Grand Total Offsets for the 2018 Reporting Year:	
Grand Total Offsets (tCO ₂ E)	1,497 tCO ₂ E

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, Capilano University (**the Organization**) is responsible for arranging for the retirement of the offsets obligation reported above for the 2018 calendar year, together with any adjustments reported for past calendar years. The Organization hereby agrees that, in exchange for the Ministry of Environment ensuring that these offsets are retired on the Organization's behalf, the Organization will pay the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on its behalf plus GST.

Executive Sign Off:



Signature

Jacqui Stewart

Name

May 31, 2019

Date

Vice President, Finance and Administration

Title



From the Office of the President

May 31, 2019

While Capilano University's GHG emission in 2018 appear unchanged, 2018 represented our first full year operating a 300 bed off-campus residence and related food service operations. Residence emissions of 221 tCO₂E, were in large part off-set by conservation measures taken late in the year in support of the provincial natural gas supply crisis.

While these extraordinary conservation efforts were successful, they created discomfort for our students and employees; we are unlikely to repeat these efforts in 2019. Instead we will be relying on our first electrification project to achieve similar results. Our largest building, Birch, is now primarily heated using an air source heat pump.

This climate change mitigation measure also allow us to adapt to our hotter summers. The air source heat pump adds cooling capacity to the Birch building. Previously, we relied almost entirely on "free cooling" to purge heat during the cooler summer evenings. This is no longer a tenable option as our hottest days remain too hot in the evenings to successfully free cool. Several areas of the Birch building, which make up more than 20% of our North Vancouver campus, were reaching temperatures that were outside WCB guidelines during summer heatwaves.

Capilano University is turning its attention to climate adaptation in earnest as it continues to strive to meet aggressive targets for greenhouse gas reduction. We engaged in our first climate change risk consultation in early 2019. This is helping us to anticipate the need for resiliency measures to ensure the future safety and comfort of our students and employees.

In addition to the need for cooling, we are beginning to look more earnestly at the risk of interface of fire and a reoccurring smoke season. As a campus nestled within a towering forest, we are acutely aware of such risks and are seeking innovative ways to build campus resiliency to these threats.

Sincerely,

A handwritten signature in black ink, appearing to read "Jacqui Stewart", is written over a light blue horizontal line.

Jacqui Stewart
Vice-President, Finance and Administration

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INTRODUCTION

Capilano University is in the early stages of considering infrastructure strategies that afford sustainable growth without compromising climate mitigation. The bulk of our greenhouse gas (GHG) emissions originate from space and water heating. Our challenge is to grow while reducing these emissions.

Many of our sister institutions use district energy systems to deploy renewable or carbon neutral fuels for generating heating and domestic hot water. While Capilano University is also exploring this option, our scale and distributed community campuses present financial challenges to implementing such a remedy.

Electrification of heating and domestic hot water systems is a second clear mitigation strategy. Capilano University has campus infrastructure to distribute sufficient electricity to allow this alternative. The strategy of electrification faces two barriers in addition to available capital, namely, building design feasibility and utility supply.

Setting aside feasibility issues, electrification serves the added purpose of improving our buildings' resiliency to a changing climate. It usually adds cooling capacity where little existed before. This allows us to prolong the life of our existing buildings. Applying these technologies involve complex business decisions that include considering: building lifespan, the pace of climate change, and deferred maintenance issues.

Buildings constructed this decade must be designed for the year 2070. Existing climate modelling suggests that we can expect extreme summer temperatures to reach 40°C. To accommodate this, Capilano University will explore alternative methods of adopting BC STEP CODE. Our preliminary research and consultation activity suggests that, while important to adaptation and sustainable growth, STEP CODE will have little impact on our efforts to reduce GHG emissions.

This leads us to a third strategy for mitigation, improving building envelope performance in existing buildings. To this end, Capilano University is employing a UBC Scholar during the summer of 2019 to explore the viability of envelope retrofit to both mitigation emissions and adapt existing buildings.

It is likely that all three strategies, district energy, electrification and envelope improvement have a role to play in mitigating and adapting to climate change at our North Vancouver campus.

Sincerely,

William Demopoulos MBA SEMAC
Manager, Sustainability



FACILITIES

**SUSTAINABLE
OPERATIONS**

This section of the report outlines Utilities and GHG emissions targets, strategies, performance and projects completed during the 2018 calendar year.

UTILITIES & GHG EMISSIONS

Targets

The Province of British Columbia, as part of a new Climate Change Accountability Act, has updated greenhouse gas reduction targets to reflect a 2007 baseline. The provincial target for 2030 is 10% higher for public sector buildings than for the province as a whole. Capilano University always used 2007 as its baseline, and has slightly more aggressive targets.

Reduction targets from 2007 baseline emissions.

Year	Province of British Columbia	Capilano University
2015	33%	33%
2020		67%
2030	50%	None
2040	60%	None
2050	80%	80%

Capilano University's plans reflect the intent to meet a 67% reduction goal by 2020. We exceeded our 2015 target of 33% in 2014 and achieved 52% reduction in 2015. However, the addition of off-campus residences introduced new emissions sources in 2017. Our capacity to meet a 67% reduction target will, in part depend upon developing more efficient residences on campus.

We are expected to grow again in 2019 with the addition of a 10,000 ft² satellite campus in downtown North Vancouver. We also plan to build on-campus residences to replace leased facilities by September 2022. Meeting our 2020 target is unlikely due to the amount of lead time necessary to both secure additional clean sources of energy supply and implement higher efficiency systems.

Reduction Strategies

Until 2018, Capilano University relied upon conservation strategies to achieve its GHG goals. These included optimizing operational performance, installing more efficient equipment and adjusting space temperature levels to ASHRAE standards. These were effective in cutting our emissions from buildings in half. Today we are exploring heat recovery, economies of scale through distributed heating and/or cooling service delivery, and alternative energy supply as a means of halving our remaining emissions.

Our other sources of emissions, including paper use and fleet, amount to less than 6% of our total emissions.

Capilano University is actively supporting the transition to electric vehicles, both for our fleet and for the public by providing free charging (see

Transportation below). Our current paper purchasing is 30% recycled content and we have active programs in place to divert paper waste from landfill (see Waste Diversion below).

Performance

Capilano University is currently holding steady at 46% reduction in emissions, without adjusting our baseline for increased building portfolio. Without the addition of off-campus residences on a short-term lease, we would be maintaining a 53% reduction level. We expect recent heat pump improvements return us to the low 50% level in 2019 and improved efficiency residences in 2022 to recover and additional 5%.

Year	Electrical - tCO ₂ e	Natural Gas - tCO ₂ e	Total tCO ₂ e	Reduction - % tCO ₂ e
2007	165.08	2,418.64	2,583.72	0%
2008	182.55	2,306.48	2,489.02	4%
2009	180.90	2,077.69	2,258.59	13%
2010	172.70	1,858.62	2,031.33	21%
2011	182.15	2,106.65	2,288.79	11%
2012	188.00	1,910.20	2,098.21	19%
2013	107.17	1,703.34	1,810.52	30%
2014	72.76	1,513.51	1,586.27	39%
2015	63.87	1,151.68	1,215.56	53%
2016	63.60	1,179.96	1,243.56	52%
2017	59.82	1,246.43	1,397.91	46%
2018	58.18	1,125.60	1,405.19	46%

Note: without residence lease, 2018 emissions reduction from buildings would be 54%.

Risks & Challenges

Our largest buildings' heating systems have been converted to efficient natural gas or electric systems. Exceptions to this include the Cedar building and Centre for Sport & Wellness (CSW). The systems in both buildings, while relatively simple, have reached end of life. We need to decide to replace systems in these

two buildings with electric, high efficiency gas or renewable energy driven systems before we encounter failure.

Electrification is an obvious choice for both Cedar and the CSW. Unfortunately, the power required to supply these buildings, while available from the regional utility grid, has not yet been distributed to Capilano University. The costs and the timelines involved to secure this additional power are significant.

The alternative to electrifying these buildings or new construction is district energy. This strategy also involves significant timelines and costs. Another approach would be envelope improvements. While they offer the opportunity to improve both these buildings and others, they would not address the risk of old equipment failure.

2018 Energy & Emissions Projects

Our 2018 GHG emissions mitigation strategy was dominated by a \$1.3 million-dollar effort to electrify the Birch building, the largest building at Capilano University. This initiative, which had the climate resiliency benefit of improving space comfort by adding cooling to the building, is expected to save 175 tCO₂e in 2020. In 2019, we expect to save roughly half this amount due to the partial operating year.

In addition to this major initiative, florescent lighting conversion to LED continued, and our type II electric vehicle charging infrastructure doubled.

2019 Energy & Emissions Projects

Capilano University expects to complete conversions of florescent lighting to LED with the exception of BOSA building in 2019. Additionally, we intend to spend more than \$250,000 in studies on long-term planning for energy and emissions at the North Vancouver Campus. Technologies being considered that impact climate change mitigation and resiliency, their GHG reduction potential, and the key consideration for our North Vancouver campus are listed below.

Measure/technology	Reduction Potential	Key Advantages	Risks/Cons
Chemical HHW treatment	12%	Immediate Adds to other alternatives	Unproven Small impact
District Energy (DES) - Sewer heat recovery	16%	Low energy cost	Uncertain volume Low grade energy
DES – geothermal	70%	Cooling	Large area of disruption High capital cost
DES – biomass	65%	Lowest cost	Public acceptance

			Fuel logistics
DES – heat recovery	80%	Free energy	Uncertain supply
Electrification	80%	Cooling	Building by building feasibility High capital cost

TRANSPORTATION

Capilano University's location, nestled half-way up to the Lower Seymour Conservation reserve with no on campus residences presents a sustainable transportation challenge for both staff and students.

Active Transportation

In 2018 a survey was conducted of cyclists on campus to identify opportunities to increase ridership. Bike storage emerged as one barrier within the University's influence. While there are ongoing efforts to establish end of trip bicycle infrastructure that integrates with other campus development plans, an interim solution for 20 additional secured bike storage spaces is in place as of March 2019.

In addition, the University has begun early investigations into a possible e-bike share program, including coordinating with community partners and continues to support active transportation initiatives like bike to work week.

Electric Vehicles and Charging Stations

Capilano University understands the importance of reducing transportation emissions associated with staff, student and faculty commuting and the use of fleet vehicles. To date they have installed 2 dedicated fleet charging stations and 8 stations for staff and students which are in regular use.

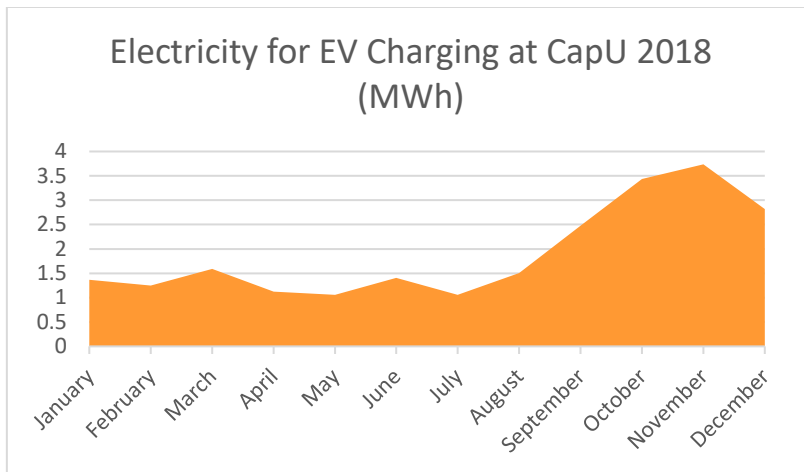
As are many organizations, the University is anticipating the launch of a greater variety of EVs in the light-duty and heavy-duty market in 2019.



Despite higher purchase costs (after provincial rebates) EVs are still expected to be cost effective due to lower fuel prices and maintenance costs. With support from BC Hydro, Capilano University has secured a

UBC Scholar, Shashank Ojha, to conduct an EV charging infrastructure investigation and prepare recommendations for further development of campus infrastructure.

Last year, January to December 2018, fleet and public electric vehicle charging stations at Capilano University consumed 22.8 MWh of electricity and saved 9,581Kg of GHG emissions. Interestingly, demand for charging appears to be growing on campus as evidenced by the increase in EV station use between the January to March period versus September to November period 2018.



A 2018 Chevrolet Volt can travel 100 km on 20 kWh of electricity. EV charging at Capilano University accounted for 11,450 km of driving, roughly the distance you would travel from the North Vancouver campus to Halifax Nova Scotia on a return trip.

WASTE DIVERSION

Capilano University performs a campus-wide waste audit each spring. Facilities and faculty collaborate for this event which provides hands-on learning for students on the importance of waste separation at the source.

Zero Waste Stations

In 2018 Capilano University launched 41 new zero waste stations across campus. One year into their use there are some emerging maintenance issues that need to be addressed. Contamination of waste streams have increasingly been observed on campus. Efforts are underway to create an engagement plan to reach new students and food service staff to ensure proper separation. There are also plans to engage the custodial staff responsible for collecting waste streams as well improving signage in storage areas. This project will be led with the help of a Student Organizer beginning in the summer 2019.



Paper

Capilano University promotes a culture of paper reduction through use of student laptops, digital learning materials and software that tracks and prompts staff to think before they print. The campus used 8085 reams (500 sheets) of paper in 2018. This represents an increase of 6% from the previous year and is responsible for 46 tonnes of the university's carbon dioxide emissions.

The PaperCut software, in place since 2012, can be used as a tool to motivate individuals to reduce paper consumption. Tracking individual paper use and attributing printing costs to departments can provide staff, faculty, and students with accountability for their printing usage and costs. There are



opportunities to educate the campus on their departments' and individual use. Sustainability will share more paper consumption data through meetings and outreach events.

MATERIALS & PURCHASING

While not a reported component of Capilano University's emissions, the embedded energy and lifecycle costs of goods used on campus is significant. Operations has continued with its focus of prioritizing green cleaning and maintenance products for health and environmental purposes. Activities include collaborating with Campus Planning to repurpose furniture for reuse in other campus facilities or by donating to local schools and continuing with waste diversion through recycling. Purchasing is also looking at upstream waste working with suppliers to reduce shipping packaging for furniture, looking for more sustainable and durable products and purchasing Energy Star certified white goods (refrigerators, dishwashers, etc.). They are also in the process of upgrading gardening equipment to battery operated versions (from gas-powered) to reduce GHG emissions.

WATER AND GROUNDS MANAGEMENT

Water management is another component of sustainability that does not specifically fall under GHG emissions reduction, but nonetheless is an area of interest for operations to reduce embedded energy. Identifying and repairing leaks from aging water mains is one area of focus with significant potential water and energy impacts. Self-watering planters and targeted tree watering as well as exploring grey water collection and xeriscaping on campus will help to limit use of potable water for irrigation. For grounds maintenance, a GIS map of invasive species on the North Vancouver and Squamish Campuses was undertaken this year which will be used to control these species and replace them with native species.



SUSTAINABILITY INITIATIVES

Sustainability outreach on campus allow students and employees to learn about and practice more sustainable behaviours and seed new opportunities for broader organizational change. Four organizations on campus contribute to organizing these rich community events: CapU Works, EarthWorks, Health and Wellness Committee and the Capilano Students' Union. Details of these events and the groups that organize them are detailed in the appendices.

While the GHG impacts of the following activities cannot be directly measured, many contribute to carbon reduction on campus and reach out into the community beyond. They help to build support more comprehensive sustainability initiatives on campus and contribute to a strong culture of sustainability on campus that is woven through all aspects of the student, staff and faculty experience.

As sustainability programming grows at Capilano University, it will draw from the Association for Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking Assessment and Rating System (STARS), allowing the University to follow best practices in engagement for even greater impact across a broader audience.

ENERGY & CLIMATE CHANGE

To complement the work of Facilities Services, CapU Works Students with support from the Sustainability Manager and the Engagement Facilitator, led a variety of sustainability events throughout the year. Three major events were the 30-Day Challenge, 30-Day Energy Challenge and Sustainability Week. These initiatives were supported in part by BC Hydro's Energy Wise Network who provided support through behaviour change and engagement training, networking opportunities and customized coaching for initiatives. Details of each activity are described below.

"We're doing an awful lot at CapU. We're educating our community, students, and staff about 'why' we do it and more importantly, how you're going to do it."

- Louise Allison

30 Day Challenge

CapU Works Student Organizers kicked-off the academic year with a 30-Day Challenge. The event was launched at the Capilano Orientation Street Party where organizers invited students and staff to adopt a sustainable behaviour for a month. A Coffee Mixer was held mid-month to re-engage with participants and their commitments. It was also an opportunity to encourage the use of reusable mugs by offering free coffee to passersby who brought their own mug. There were 20 participants in this event and a prize draw garnered lots of attention on social media with a zero-waste prize.



30 Day Energy Challenge

In the new year, Student Organizers focused their efforts on promoting energy conservation behaviours among the campus community. Each week focused on a specific behaviour where a facilitated discussions took place at the Capilano Students' Union lounge to engage students in a conversation around energy conservation.

- Week 1: Stair Master – take the stairs
- Week 2: Water Wise – use cold water wash
- Week 3: Close the Circuit – unplug unused electronics
- Week 4: Sweater Day – dress in layers

Participants were encouraged to submit a photo of themselves performing the desired behaviour as a prize entry into the monthly draw. Forty students participated in the activities and nine submissions were received for the prize draw.

Sweater Day

Sweater Day was the wrap-up event for the 30-Day Energy Challenge and provided a fun way for people to get involved. The temperature in select buildings was turned down by 1°C which resulted in a 4.5% energy reduction for the day (compared to 3 previous days' consumption with similar temperatures).

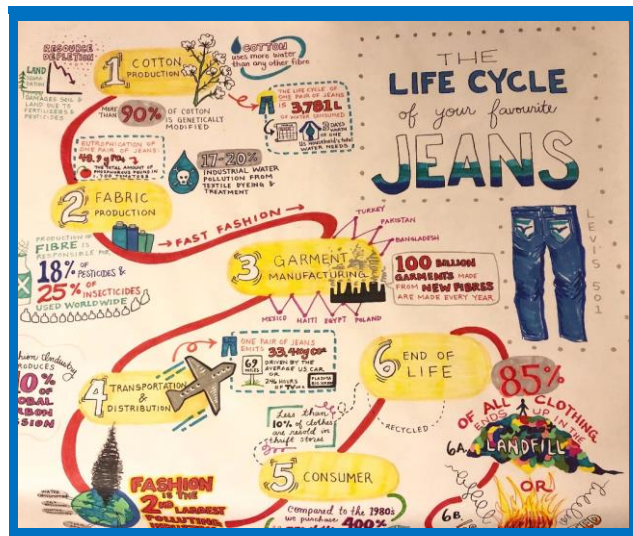


Sustainability Week

The largest event of the year was a waste-themed week of events designed to “raise the bar” on campus around the issues of waste. New partnerships were developed in an effort to reach broader audiences and tailor the events to their interests. Students from the IDEA program created an art piece from the discarded coffee cups collected during the waste audit this year. The art piece was on display throughout Sustainability Week. Student Organizers led nine classroom presentations across five departments reaching 265 students. The presentations promoted the upcoming week’s events and introduced some of the topics being explored in the talks.

Clothing Swap

Textile waste is one of the fastest growing waste streams in Canada and a Clothing Swap was organized to encourage a sharing economy where gently used clothing could be reused. There were 105 attendees at the Clothing Swap and 142 pieces of clothing found a new home; helping keep textile waste out of the landfill. Student Organizers discussed the life cycle of a pair of jeans and shared stats on the rise of this wasteful industry.



A 2015 waste analysis by Metro Vancouver showed the average person in the region throws out 19 kilograms, or 42 pounds, of textiles every year.

Greening Film

Three speakers involved in the film industry shared their passion and their practices in greening the film industry. Jennifer Sandoval of Green Spark Group discussed the many services available to the film industry to reduce their footprint. Ellie Robinson, Costuming for Stage and Screen alumna and tee-cycle depot owner, shared her practices on and off-set to help reduce textile waste. Smiely Khurana, Motion Picture of Arts students, shared her lessons from adopting zero-waste practices on her 3rd year production with her crew.



Smiely Khurana, Student Presenter

Trash Talk

The Capilano Students' Union, in collaboration with CapU Works, presented their recommendations for expanding the Greentainer program on campus. Attendees were invited to sign the recommendations to increase in the type of reusable containers offered in the cafeteria.



Emily Gaudette, Student Organizer (2nd from the left), with student attendees

Rethinking Recycling

One of the Student Organizers led a discussion on the importance of the forgotten “R”s of recycling: Reusing, Reducing and Rethinking. Attendees were invited to think through creative ways to reduce and reuse items and understand the issues with over-relying on recycling to solve our wasteful ways.

Sustainability Showcase & Social

Four speakers shared their efforts to improve waste in their respective fields. Lou Villalba, CapU Business faculty talked about his research in a natural stevia fertilizer and the impact for soil and water health. Katrina Vasilenko of Ocean Wise's Plastic Lab talked about the pervasive nature of microplastics in our oceans. Christine Deacon represented the Plastic Bank, a 2-time UN Award winning enterprise that's fighting ocean plastic and poverty. Bud Fraser from UBC Campus + Community Planning shared their university's zero waste foodware strategy being developed.

ENGAGEMENT & AWARENESS

Activities in this section are hands-on or in-person events that promote campus community interaction and learning.

EarthWorks Lecture, Film & Field Trip Series

This popular series hosted by Capilano University invites students, employees and the local community to connect to sustainability professionals in the Metro Vancouver community. Featured speakers focus on local researchers, activists, and educators to explore complex environmental issues from a broader perspective.

Waste to Energy Tour

Staff, faculty and students attended the Covanta waste-to-energy facility tour in Burnaby as part of Sustainability Week's waste-themed events. The facility is responsible for burning 20-25% of waste from the North Vancouver and other municipalities and turning it into steam and electricity.

Invasive Species Pull

Capilano University is truly situated in nature, with 35-acres of land with forest pathways connecting many of the buildings. To support students, staff, and faculty to connect to nature and learn about the land the university occupies, each year grounds keeper Jo Ann Cook arranges invasive species pulls. This year three pulls were organized in November to help manage encroaching ivy, holly, laurel, silver nettle vine, periwinkle and himalayan blackberry. This also helps native plant species to thrive and contributes to a healthier ecosystem.



WASTE REDUCTION

Even more effective than diverting waste from landfill to reduce GHG emissions is eliminating waste in the first place. In January 2018, the reusable “Greentainer” program was launched to reduce the amount of single-use take out containers from the cafeteria.

Greentainers Program

Between April 2018 and March 2019, a total of 14,025 Greentainers were used; this replaced the same amount in single-use take-out containers being sent to the landfill.

While the program has demonstrated proof of concept, there are opportunities to improve loss rates through education and outreach with user groups. Custodial and food service staff are also important stakeholder groups who contribute to the success of the program.

The Capilano Students’ Union undertook a short survey with students this year and came up with recommendations to expand the program. The CSU hopes to establish a dedicated sustainability position to help support this and other initiatives on campus.

Residence Move-Out Program

The Residence Life Facilitator organized a move-out and recycle program at the end of the spring semester. They collected 180 kg of items (electronics, clothing, shoes, paper and plastics) of which 15 kg was repurposed for use within the residence community. The remainder was donated to Diabetes Canada or recycled.

Approximately 350 kg of linen and beddings was also donated to Diabetes Canada. Plans are in place to continue the program in the future to help reduce waste in our residence community.



14,025 Greentainers take up approximately 190,000 cubic feet. Enough to fill 315 transport vans.



2019 Waste Audit

This year marked the 10th annual waste audit on campus. The event involves the collaboration between faculties, operations and students to sort through an entire day's amount of garbage. This year, 107 students sorted through 335 kg of waste and found that improperly sorted materials contaminated 42% of our waste on that day! There has been a noticeable decrease in our compliance rate over the last few waste audits which demonstrates the opportunity to re-energize our waste education efforts for new staff and students. Plans to improve the campus' waste separation efforts have begun and include multiple stakeholder groups.



Centre for International Experience (CIE) Waste Reduction Events

Pumpkin Carving & Organic Waste Reduction

In the fall of 2018 CapU Works collaborated with the Centre for International Experience to host a pumpkin carving event for international students. The event included recipes for roasted pumpkin seeds and highlighted organics waste reduction initiatives on campus.

Sustainability Workshop

In January, as part of the new International Student Orientation, CapU Works led an introductory workshop on sustainability which included waste sorting on campus, how to use the Greentainers and energy conservation tips.



TRANSPORTATION

Sustainable transportation is a challenge at Capilano University; however, continuous support from operations to provide additional cycling infrastructure and initiatives like the U-Pass, an emerging rideshare network and Bike to Work Week help to support staff, students and faculty find sustainable transportation strategies.

Bike to Work Week

Capilano University participated in the annual HUB Bike to Work Week to promote physical fitness, community connection and a form of sustainable commuting. This year 27 participants logged 209 trips and almost 1,600 kilometers, which equates to an avoidance of 340 kg's of GHG emissions.

Spearheaded by the Health & Wellness Committee, students and employees were engaged through bike maintenance workshops and Celebration stations where snacks, bike repairs and prizes were provided for riders.

A healthy tree sequesters up to 21kg of carbon in a single year.

This year's Bike to Work Week participants saved the carbon it would take 16



U-Pass

University students have access to the U-Pass which provides a discount on bus, Seabus and SkyTrain services within Metro Vancouver, in addition to the West Coast Express. The pass can be loaded onto a

Compass Card to help students save money as well as greenhouse gases by using sustainable forms of transportation.

COMMUNITY ENGAGEMENT

Through the planning and coordination of three Community Engagement Initiatives, staff, students and faculty had the opportunity to partner and interact with local businesses and community members.

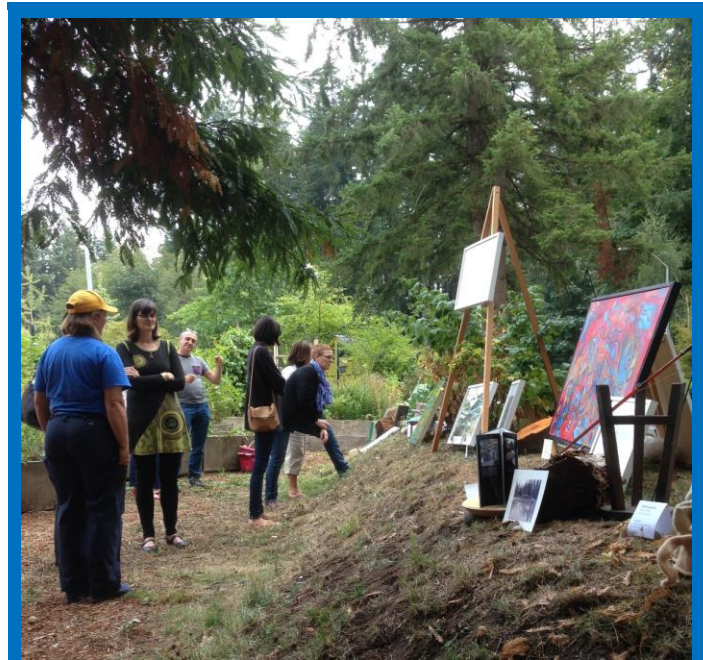
Community Garden

The Campus Community Garden has been in operation since 2013, offering plots to staff, employees, alumni and our neighbors. Currently a combination of 57 raised wooden, 6 accessible raised, 8 cement plots and 7 communal planters provide space to cultivate flowers, veggies and relationships with other garden enthusiasts. It has been well received by the Capilano University community as the growing waitlist indicates.

Individual plot owner's plant and tend their spaces in addition to helping with a communal shed and general grounds clean-up as part of the annual AGM. Our grounds keepers play a vital role in maintaining the garden walkways, communal strawberry and blueberry beds, and compost.

Communal plots are used to support campus-based initiatives such as planting native plants like tobacco and sweet grass to be harvested and used in on campus ceremonies through the Kéxwusm-áyakn Centre. This year the community will also explore planting species that can be used in dyeing textiles to be used within Early Childhood Care and Education (ECCE) and Costuming Departments as well as the Children's Centre.

Other activities planned for the year include a hanging basket workshop and hosting another 'Art in the Garden' event this summer.



2018 Art in the Garden Event

Winter Market

This year's Winter Market attracted an estimated 470 attendees to kick-off holiday shopping and featured local and sustainable goods from 26 vendors. Along with a zero-waste gift wrapping station, vendors ranged from locally-made cards, clothing and textiles to hand-blended teas and homemade soups.

Led by the CapU Works student, Haley Kuzek, this event is held for a full day each November and was planned and implemented in partnership with the Facilities Team.



Mobilizing Resources Networking Event

Mobilizing Resources is a community networking event organized by Earth Works to bring together local non-profits and student volunteers. This year's event had to be re-scheduled due to snow, reducing the normally high attendance. The rescheduled event saw 6 organizations come out to meet with 60+ interested students and staff.



SUSTAINABILITY IN THE CURRICULUM

SAMPLE SUSTAINABILITY CURRICULUM

Sustainability as an element of curriculum continues to be a strong theme across disciplines at Capilano University. Multiple faculties are now offering climate change content as part of their core curriculum; embracing the opportunity to create a living lab on campus. The following is a sample of climate change curriculum and how it influences related activities on campus.

GEOG 316 Climate Change: From Science to Sustainability | Cheryl Schreader

This course, offered as an elective in the Global Studies program, attracts a number of students from business, communications and film disciplines. Half the course content covers the science of climate change using the International Panel of Climate Change reports as their source material. The second half of the course looks at communications, energy markets and policy in British Columbia and Canada as it relates to climate science. Each year students must prepare an action portfolio and submit proposals to undertake three activities connected to climate change and report on their experience. These can range from personal commitments to try vegetarian or vegan diets, to hosting an event for friends to discuss climate change.

IBUS 256 Introduction to Supply Chain Management and Sustainability | Azita Shafai

Half of this supply-chain management course is dedicated to sustainability purchasing practices for procurement and transportation. Each year the class is broken into groups to prepare a report and recommendation on a sustainability challenge on campus. This year students tackled staff and student transportation challenge at CapU. The students prepared a 15-page report and a formal presentation that outlines 2 practical 12-month projects to address the issue that could be undertaken by Capilano University; one of which must be a low-cost option of \$5,000 or less. A previous class project successfully seeded the campus Greentainer program.

Continuing Education – Climate Change Adaptation Training

Capilano University is part of a group of universities and BC Professional Associations that submitted a proposal for a Climate Change Adaptation Training project. The proposal was accepted and we are now in the early stages of developing this project that will be led by the ResilienceByDesign Research Lab and Royal Roads University in collaboration with the BC Climate Action Secretariat. Other institutions involved are SFU, UNBC, UVic, VIU and UBC.

The objective of this project is to contribute to and mobilize the climate change adaptation capacity - “knowledge, skills and competencies” - of BC professionals. The goal is to increase the capacity of professionals working in a range of sectors and disciplines to effectively integrate and apply a consideration of future climate in their advising, decision-making, and practice. This project will create resources and professional development training course offerings, through the continuing professional development at 7 BC post-secondary institutions including Capilano University.



SUSTAINABILITY PROGRAMS & COLLECTIVES

A number of programs and individuals are involved in moving campus Sustainability and energy saving initiatives forward through curriculum alignment and development, experimental learning and community and campus engagement. These programs and individuals are described below.

OPERATIONS MANAGEMENT

Operations Management consists of Facilities Maintenance, Purchasing and Information Technology (IT). Collectively, these departments are responsible for maintaining and managing numerous complex systems and day-to-day activities that allow students, staff and faculty to learn and work on campus.

Operations Management has taken great strides to integrate sustainability thinking into ongoing activities, continually seeking opportunities to decrease the impact of energy, waste, water, and transportation from campus operations.

CAPU WORKS

CapU Works is a program that employs students to develop and implement projects under the supervision of the Sustainability Manager and the Engagement Facilitator. In addition to their course load, students dedicate 10 hours a week to planning, coordinating and implementing events on campus. The students were selected based on their desire, skills and ability to create a more sustainable and community connected campus.



This past year the program employed 4 students from September 2018 to April 2019. Collectively, they implemented 13 initiatives and events, while supporting an additional 15 events to support other campus programs and cross market CapU Works activities. Notable events and initiatives launched this year include:

- 30-Day Energy Challenge
- Greentainer Program Re-launch
- Winter Market
- Sustainability Week

For further details see the Events and Initiatives summary table in **Appendix B** and descriptions of events in the Sustainability Initiatives section of this report.

"CapU Works is important. People don't understand climate change and [this program] inspires people to know they can make a difference"

- Chantelle Cardin,
CapU Works Student

EARTH WORKS

The Earth Works' mission is to educate and inspire students as well as members of the campus and the local community to understand complex environmental issues from a multi-disciplinary perspective, enabling all to take action for positive change.

Each year an interdisciplinary team of students, staff and faculty host a series of lecture, film and networking activities to bring awareness and encourage action on topics related to environmental stewardship both within the campus and local community.

Instructors encourage their students to attend events which are considered co-curricular (activities that students engage with outside of their regular course load). Students attend at least 3 lectures or films and 1 hands-on event receive an Earthworks notation on their transcript.

Each year Earth Works is supported by a CapU Works Student Liaison.

For further details on EarthWorks events, see the Events and Initiatives summary table in **Appendix B**.

"No student should leave our campus without a general understanding of climate change, and what they could do personally to minimize their role in it."

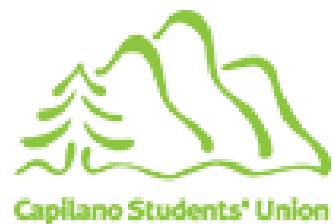
- Roy Jantzen
Professor in the
Faculty of Global
and Community

HEALTH & WELLNESS COMMITTEE

The Health & Wellness Committee promotes wellness in mental, social and physical health matters for staff and students. Led by Louise Allison and the Committee includes members from all employee groups, they undertook a number of initiatives such as Bike to Work Week, Spring Clothing Drive, ICBC pedestrian and cyclist visibility promotions, Mountain Equipment Co-op run clinics and Well-being Week.

CAPILANO STUDENTS' UNION

The position of CSU Vice-President of Equity and Sustainability is to support initiatives and facilitate student engagement in these topics. This year they undertook a survey of the Greentainer program and prepared a number of recommendations to improve and expand the program. A new position has also been approved that will support the university's sustainability efforts and partnerships with Facilities and CapU Works.



APPENDIX A – CAPU WORKS TEAM



Chantelle Cardin - CapU Works Student Organizer

Chantelle is in her third year of the Tourism Management Program at Capilano University. Chantelle was a co-facilitator of the 30-Day Energy Challenge and organized the Sweater Day photo contest and event. She organized the clothing swap as part of Sustainability Week, which saw 104 pieces of clothing be repurposed. She also managed the CapU Works social media accounts throughout the year.



Teagan Dawson - CapU Works Student Organizer

Teagan is in her second year of the Global Stewardship program. Teagan helped manage the community garden during the summer and organized weed pull events for gardeners. She was the EarthWorks student liaison for the second year, helping support their lecture and film series as well as the Mobilizing Resources networking event with local non-profits.



Emily Gaudette - CapU Works Student Organizer

In her last year at Capilano University, Emily wanted to get involved with a campus project that was most in line with her values. She coordinated multiple Sustainability Week events, supported activities part of the 30-Day Challenge and was the volunteer coordinator for the Winter Market. This spring she will complete her 3rd year as a student in the Global Stewardship Program pursuing an Associate of Arts Degree in Global Stewardship while also sitting as an elected member of the Capilano University Board of Governors.



Haley Kuzek - CapU Works Student Organizer

Haley is in her 4th year of a Liberal Studies BA, focusing on environmental studies. In her CapU Works role she organized 27 vendors for the Winter Market and coordinated the Student Organizer roles (communications, volunteers, logistics) for the event. She also led the 30-Day Energy Challenge in January with weekly conservation themes and developed and facilitated the Rethinking Recycling event during Sustainability Week to educate students on the over-reliance on recycling and better solutions to our waste problems.

APPENDIX B – INITIATIVES TABLE

Events & Initiatives Summary Table.

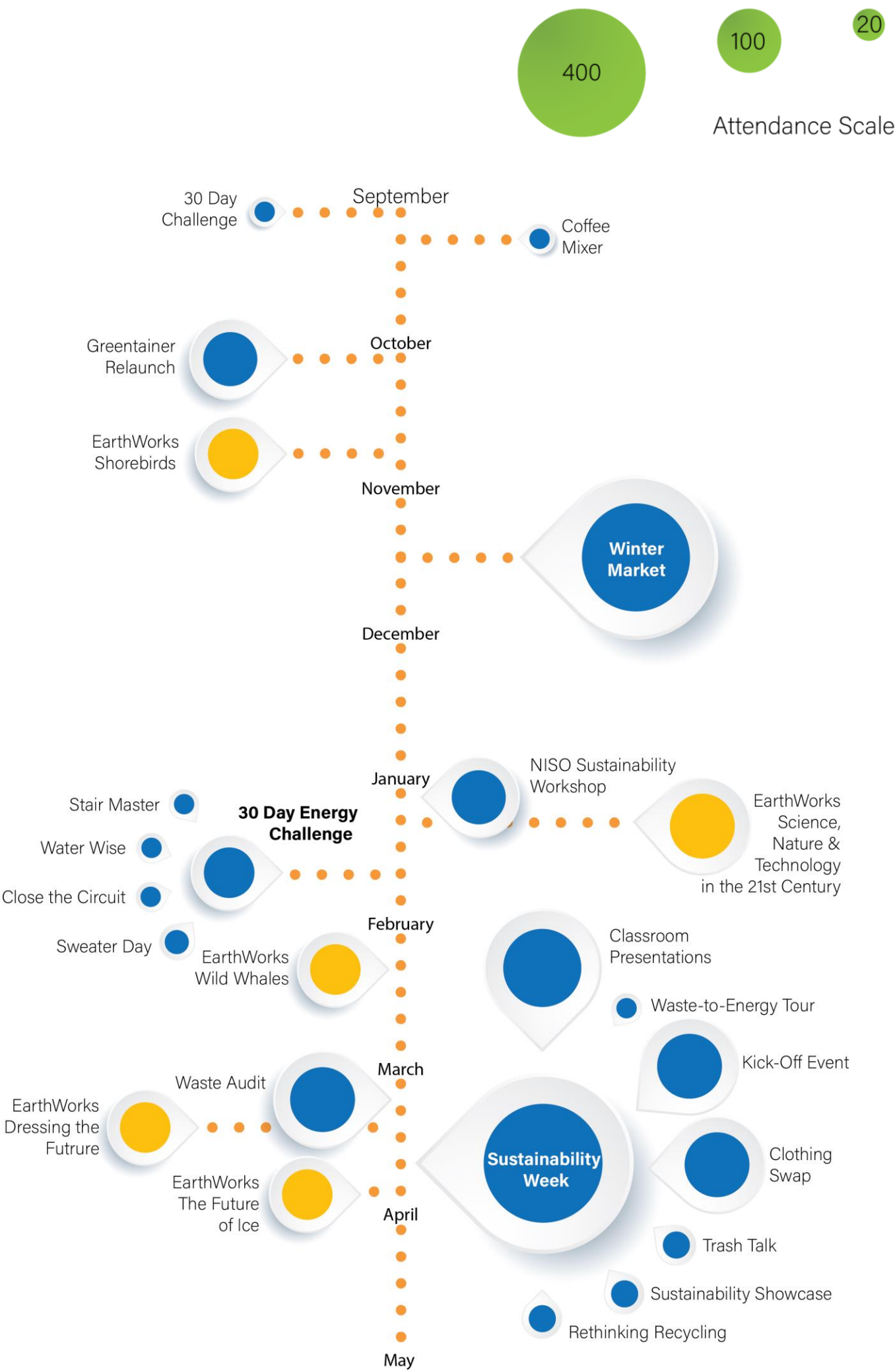
Event	Lead Program	Support Program(s)	Topic
30-Day Challenge + Coffee Mixer	CapU Works	Chartwells/Student Experience Fund	Community Engagement
Greentainer Program Re-Launch	CapU Works	Facilities, Purchasing, Chartwells, BEST Service Pros, Communications and Marketing	Engagement + Awareness
Pumpkin Carving Event & Waste Education	CapU Works	Centre for International Experience	Engagement + Awareness
Winter Market	CapU Works	Facilities	Community Engagement
Invasive Species Pull (3 events)	EarthWorks	Facilities/CapU Works	Engagement + Awareness
International Student Sustainability Workshop	Facilities	Centre for International Experience	Engagement + Awareness
30 Day Energy Challenge <ul style="list-style-type: none"> - Week 1: Stair Master - Week 2: Water Wise - Week 3: Close the Circuit - Week 4: Sweater Day 	CapU Works	Chartwells: Student Experience Fund	Engagement + Awareness
Waste Audit	CapU Works/Academics	EarthWorks, Facilities	Curriculum
Waste-to-Energy Facility Tour	Facilities		Community Engagement
Sustainability Week <ul style="list-style-type: none"> - Classroom Presentations - Greening Film - Sustainability Showcase <div>Clothing Swap Talking Trash Rethinking Recycling</div>	CapU Works	Facilities, Events	Engagement + Awareness
EarthWorks Networking Events <ul style="list-style-type: none"> - Mobilizing Resources 	EarthWorks	CapU Works	Community Engagement

EarthWorks Lecture & Film Series <ul style="list-style-type: none"> - Science and Nature in the 21st Century - Wild Whales: Marine Mammal Research & Conservation in BC - Addressing the Future: A Look at Art & Ecology Today - The Future of Ice 	EarthWorks	CapU Works	Engagement + Awareness
Community Garden	CapU Works	Facilities	Community Engagement
Course Curriculum ¹ <ul style="list-style-type: none"> - TOUR 307 Tourism and Climate Change - REC 152 Environmental Stewardship - BIOL 105 Environmental Biology - GEOG 316 Climate Change: From Science to Sustainability - GEOG 102 Environmental Geography: Global Concerns - IBUS 256 Introduction to Supply Chain Management and Sustainability - NABU 504 Strategic Management, Value Chain and Social Sustainability - SOC 302 Sociology of Climate Change 	Academics		Curriculum
Seed Planting Event Cap 50 Trail build	Academic	Facilities	Community Engagement
Clothing Drive	Health & Wellness		Engagement + Awareness
ICBC Pedestrian and Cyclist Visibility Promotions	Health & Wellness		Engagement + Awareness
Well-Being Week	Health & Wellness		Engagement + Awareness
Bike to Work Week	Health & Wellness		Transportation

¹ This is just a selection of known course content that covers climate change and GHG emissions to demonstrate the range of integration into the curriculum.

APPENDIX C – ENGAGEMENT

TIMELINE & ACTIVITIES



Part 1: CNAR Survey

1. General Information

Name: William Demopoulos

Contact Email: williamdemopoulos@capilano.ca

Organization Name: Capilano University

Sector: Post Secondary

Role - Please select your role(s) below.

If more than one individual completed the survey, multiple categories may be selected:

Energy Manager: Yes

Sustainability Coordinator: No

Administrative Assistant: No

Facilities/Operations Manager/Coordinator: No

CEO/President/Exec Director: No

Treasurer/Accounting: No

Superintendent: No

Other - Please Specify: Sustainability Manager

A. Stationary Sources (e.g. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

1. Actions taken by your organization in 2018 to support emissions reductions from buildings.

a) Do you have a strategy to reduce emissions from stationary sources?

Yes

If yes above, what are the main goals?: 33% by 2015, 67% by 2020, 80% by 2050 from 2007 emissions level, absolute reduction.

b) Whether you have a strategy or not (1.a), briefly describe your organization's plans to continue reducing emissions from stationary sources:

I. Over the medium-term term (1-5 years)

There is no single strategy that will achieve Capilano's emissions mitigation and climate resiliency goals. We employ the following strategies in the short term window of 1-5 years:

1. Re-develop and implement a Campus Energy and Emissions Plan for the North Vancouver Campus (~50,000m2 of buildings) to achieve our 67% goal. This involves making strategic decisions around:
 - a. Planning for district energy, a system of heating and cooling that shares a single plant, capable of using renewable or waste energy sources and distributing service to multiple buildings via hot or cold water,
 - b. Fuel switching or electrification of buildings, which substitutes the high emissions natural gas services in a building for heating hot water used for heating or domestic purposes, for lower emissions equipment that relies on electricity,
 - c. Setting the pace for adopting a high performance level of STEP CODE, a new Provincial Government initiative to ensure that both our new and existing buildings use as little energy as possible, and ideally, generate some of the energy that they use or at least use renewable energy where possible.
2. Continuing to conserve energy through proper management of our building operations,
3. Reducing our energy consumption by acquiring higher efficiency equipment, both for building operations and for end use appliances, such as refrigerators,
4. When we are not operating the buildings that we occupy, leasing facilities that rely on renewable energy sources when possible, or are highly efficient where not possible, and, at a minimum, carefully tracking the related emissions to allow proper off-setting and carbon neutrality.

II. Over the long term (6-10 years)

We hope to achieve our 2050 goal, 15-20 years ahead of schedule and will begin planning for net positive GHG on certain building and vehicle energy use. This involves deep retrofit of our existing buildings and, where possible implementing opportunities for renewable energy generation.

c) Please describe your strategy's goals (if any) related to [energy audits](#).

All of our buildings have received some level of energy audit for conservation purposes. Additionally, as technologies advance, cost neutral or cost positive retrofits are possible and we perform investigations and audits on the application of these technologies using professional services. This requires revisiting our equipment inventories to identify opportunities for energy and cost savings and emissions reductions.

I. What % on average of your building portfolio has an energy audit completed each year (if any)?: 10

d) Please describe your strategy's goals (if any) related to building retrofits.

We audit to test the economic and environmental feasibility of applying new building technologies for efficiency, conservation, operational continuity, including keeping pace with climate change for heating and cooling service levels and emissions reductions.

I. What % on average of your building portfolio is retrofitted each year in the following categories (if any) - click [here](#) for further information:

Minor retrofits (e.g., low cost, easy to implement measures including caulking, lighting, adding roof insulation, etc.) (%): 98

Major retrofits (e.g., replacing windows and doors, equipment replacement such as boilers, etc.) (%): 12

Deep retrofits (e.g., replacing roof, replacing the heating, ventilation and air-conditioning system with a renewable technology like a ground-source heat pump, etc.) (%): 30

e) Please describe your strategy's [re/retro-commissioning](#) goals (if any)?

Capilano University performed retro commissioning on our four largest buildings continuously for 4 years. We also implemented and maintained baseline energy use reporting against past performance to ensure that our buildings are continuing to perform. We are in the process of implementing a randomized preventative maintenance system on all our energy using building equipment's controls. This will result in recommissioning of our controls and performance sensors at the rate of 25-33% per year.

I. What % on average of your building portfolio do you recommission each year?: 7.5

f) Do you keep records of Refrigerant gases category and refilling volumes?

Yes

I. If yes, have you included the associated emissions in your reporting?

No

II. What, if any, mitigation approaches have been considered? Please describe.

Most of the refrigeration equipment for buildings is major mechanical and maintained by third party contractors. Because fugitive emissions or refrigerant gases are such a small component of our emissions profile (less than 1%) we have not undertaken tracking, which is complex and laborious. In late 2018-19, we added an air source heat pump to our largest building. While this is expected to reduce emissions in that building by 67% below 2017 levels (we had already reduced by approximately 50% from 2007), it does introduce the risk of fugitive emissions from refrigerant with significant global warming potential. We expect to implement tracking of fugitive emissions for the 2020 calendar year.

g) How many newly constructed buildings received at least LEED Gold certification in 2018: 0

I. How many newly constructed buildings did not receive LEED Gold certification?: 0

II. Please explain why LEED Gold certification was not obtained.

Not Applicable - we did not construct any buildings in 2018.

B. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:**3. Actions taken by your organization in 2018 to support emissions reductions from mobile sources.****a) Do you have a strategy to reduce emissions from mobile sources?**

Yes

I. If yes, what are its goals?

Fuel switching to electric vehicles.

Purchase and mileage monitoring to identify performance loss and need for replacement.

b) Whether you have a strategy or not (3.a), briefly describe your organization's plans to continue reducing emissions from mobile sources:

I. Over the medium-term term (1-5 years)

Change out campus service vehicles to electric.

Install type III fast charging for EVs.

Using shared Hybrid vehicles for business travel.

II. Over the long term (6-10 years)

Change our campus vehicles to electric.

c) How many fleet vehicles did you purchase from the following categories:

Electric Vehicle – EV - (e.g., Nissan Leaf, Chevy Bolt): 2

Gas/diesel vehicle: 10

d) How many existing EV charging stations does your organization have in each category:

level 2: 14

How many level 2 stations (if any) are specifically for your fleet vehicles: 2

e) How many EV charging station(s) did you install in 2018 in each category:

level 2: 8

How many level 2 stations (if any) were installed specifically for your fleet vehicles: 0

f) Other actions, please describe briefly (e.g. charging station feasibility studies, electrical panel upgrades, etc.)

Hiring of a UBC Scholar to explore Type III and Type I lamppost charging.

Applying for Federal funding to support the addition of our first Type III charger

4. Please indicate the number of the vehicles in the following vehicle classes that are in your current fleet (including any purchased in 2018):

Definitions:

- Light duty vehicles (LDVs) are designated primarily for transport of passengers <13 and GVWR<3900kg
- Light duty trucks (LDTs) are designated primarily for transport of light-weight cargo or that are equipped with special features such as four-wheel drive for off-road operation (include SUVs, vans, trucks with a GVWR<3,900kg)
- Heavy duty vehicles (HDV) includes vehicles with a GVWR>3,900 kg (e.g. ¾ tonne pick-up truck, transport trucks)

a) Light duty vehicles (LDVs)

Electric Vehicles – EV - (e.g., Nissan Leaf, Chevy Bolt): 2

Gas/diesel: 1

b) Light duty trucks (LDTs)

Gas/diesel: 13

5. Please indicate the number of the vehicles you plan to replace in your fleet:

How many LDVs do you plan to procure annually over the next 5 years?: 1

How many LDTs do you plan to replace annually over the next 5 years?: 13

C. Office Paper: Indicate which actions your PSO took in 2018:**6. Actions taken by your organization in 2018 to support emissions reductions from paper supplies.****a) Do you have an Office Paper strategy?**

Yes

I. If yes, what are its goals?

Emissions reduction, double sided paper use, financial savings.

b) Whether you have a strategy or not (6.a), briefly describe your organization's plans to continue reducing emissions from paper use:**I. Over the medium-term (1-5 years)**

Decarbonize paper supply by pressuring for public institution purchasing group acceptance of wheat paper.

II. Over the long term (6-10 years)

100% renewable or recyclable paper.

c) Have an awareness campaign focused on reducing office paper use

Yes

d) Purchased alternate source paper (bamboo, hemp, wheat, etc.)

No

e) Other actions, please specify.

Explored wheat paper and reintroduced benefits to the purchasing department.
Discussed wheat paper with other public service institutions.

Part 2 – A (internal)***Reminder that this section is not included in your public report.*****1. Does your organization have an emission reduction target?**

Yes

I. If yes, please describe briefly:

See public

2. Does your organization have a strategic emission reduction plan to reduce the organization's emissions (e.g. 5 year plan)?

Yes

If yes, please describe briefly and include URL if posted publicly:

We're currently redeveloping our Strategic Energy And Emissions Plan to integrate with our new master plan.

3. Does your organization use building energy management tools? If yes, please select any that apply.

PUMA; Sky Spark; Pulse Energy

Other - Specify: We're looking at Portfolio Manager for this year and have Copper Cubes for trend analysis. We're considering Kaisan for fault detection. We track occupant building use via wifi connections and are hoping to optimize building hours via scheduling in the future. We have added weather tracking on-campus.

a) A low-carbon business travel policy or travel reduction goal (low-carbon = lowest emission of greenhouse gas per kilometer per passenger)

No

i) If yes above, please describe briefly.

We track but do not have policy in place or a reporting requirement.

b) An operations policy or program to facilitate the reduction and diversion of building occupant waste (e.g., composting, collection of plastics, batteries) from landfills or incineration facilities

Yes

c) Green procurement standards/policy for goods (e.g., office furniture, fleet, etc.)

Yes

i) If Yes above, could you elaborate on the standards/policy?

Fair trade for some food and drink products. Single serving take out container reduction efforts.

e) Other, please describe briefly

By this point in the survey ... people are trying to finish, not trying to expand on the info provided (sorry, just letting you know so you'll understand why you have sparse answers here).

5. Out of all the emission reduction projects your organization has undertaken in 2018, please describe the one action taken that resulted in, or is expected to result in, the greatest emissions reductions (this may be considered your "success story" that you may want to highlight within your 2018 CNAR):

Added an air source heat pump to 20% of our campus which reduces our shoulder season emissions from that building by 24/25ths and adapts to climate change.

a) If possible, please include an approximate estimate of the expected emission reductions from the project(s) (in tonnes CO2e and % reduction):

Tonnes CO2e: 175

% total CO2e reduction: 12.5

b) Did you face barriers with funding in 2018 when trying to develop an emission reduction initiative? If so, identify the reason behind the barrier (select all that apply):

Rules around spending or applying for the funds do not meet my organizational needs

Other - Specify: Crossing the capital/operational boundaries of surplus is a challenge.

Crossing multiple years is a challenge.

Not being able to fund through debt instruments is a challenge.

c) What projects ("opportunities") does your organization see as being most effective in leading to substantive reductions of emissions and increased energy efficiency?

Please describe briefly.

District energy.

Fuel switching.

CO2 heat pumps.

Stationary Sources Data:

6. What is the total amount of floor space (Gross Floor Area) in your organization (including occupied and unoccupied space)? (Please report in square meters)

New Field: 52000

FTE (employees) Data (excluding Health Authorities and their Affiliates)

7. How many Full Time Equivalent employees (FTEs) do you have within your organization?

New Field: 1100

8. How many Full Time Equivalents (FTEs) in your organization are tasked with energy management and sustainability operations (i.e. focusing on reducing energy, water, waste, climate impacts from the operations)?

New Field: 2

a. In the case of energy managers/advisors, does your organization receive support from BC Hydro/Fortis BC?

Yes

If yes above, please explain.

We are supported by BC Hydro but because we are focused on fuel switching and have dramatically reduced our natural gas consumption, we are not eligible for additional Fortis Gas support.

Part 2 – B (internal)

Public Sector Reporting on Preparing for Climate Change Risks

The Climate Action Secretariat (CAS) is seeking your feedback on your organization's readiness to report on preparing for climate change risks. To gather your feedback, we have included new questions on preparing for climate change risks in this year's CNAR Survey. The questions are based on recent legislative amendments that require provincial reporting on progress towards managing risks resulting from a changing climate. New government actions to prepare for climate change and recent legislative changes are outlined below.

If you have any questions or concerns while completing this survey, please contact Julia Berry, (climaterisk@gov.bc.ca)

New Government Actions to Prepare for Climate Change

Historical and ongoing greenhouse gas emissions mean that the climate will continue to change and we can expect to see [impacts](#) from more frequent or extreme weather events, increased temperatures and precipitation, and rising sea levels. Changes will continue for decades.

Managing the risks resulting from a changing climate is essential to secure the longevity of asset investments, protect our health and well-being, and reduce costs associated with climate-related disasters. By protecting our capital and social investments now we can ensure that British Columbia's economy continues to thrive in a changing climate.

The Province is taking important steps to manage risks resulting from a changing climate. We are creating a legislative foundation for predictable and consistent provincial actions to prepare for climate change risks. The results of these first steps will inform a provincial climate resilience strategy in 2020.

Legislative Change: [Climate Change Accountability Act](#)

In November 2018, the Government of British Columbia brought into force amendments to the Greenhouse Gas Reduction Targets Act, which included:

- Renamed the Act to the Climate Change Accountability Act;
- Established new provincial greenhouse gas emissions reduction targets; and
- New requirements for the Province to report publicly on how it is preparing for climate change risks.

Starting in 2020, the province will publicly report every two years on risks that are reasonably to be expected resulting from a changing climate, as well as plans, actions, and progress to reducing these risks.

Given the public sector's important role in provincial service delivery and asset management, public sector organizations may be asked to provide information that feeds into the provincial climate risk and resilience progress reports. The earliest that public sector organizations could be asked to contribute information to the provincial report is 2022.

Changes to the 2018 CNAR Survey

This year's survey questions will help inform policy development on future public sector reporting. The questions reflect our current thinking on the type of information that PSOs may be asked to provide.

The intent of the questions is to help CAS:

- Understand current capacity to report on progress towards preparing for climate change;
- Identify opportunities to increase capacity by providing additional resources and tools; and
- Receive targeted feedback from the public sector on the proposed categories of information.

CAS recognizes that the ability to report on progress related to managing climate change risks will vary across organizations and regions. In addition, CAS recognizes there is a need for additional resources and tools to support the public sector in meeting any future reporting. Your feedback will help to inform reporting timelines and additional resource requirements.

Instructions

There are no wrong answers. Your feedback on the new questions will help us understand current public sector capacity to report on preparing for a changing climate.

Please answer the following questions to the best of your ability. For any questions that you are unable to answer, please help us understand what you or your organization would need to be able to answer these questions. The responses you provide are for internal purposes.

If you are seeking further information on climate change in BC, please visit:

- Pacific Institute for Climate Solutions: [Climate Insights 101 – BC Climate Impacts and Adaptation](#)
- [BC Regional Adaptation Collaborative Program: Webinar Series](#)
- [BC Housing: Creating a Cost-Effective Adaptation Strategy](#)
- Addressing Climate and Health Risks in BC: [Health Care Facilities](#)
- [Green Infrastructure and Health Guide](#)
- The Government of British Columbia's [Adaptation and Climate Impacts Webpage](#)

If you are seeking support from within your organization to answer the new questions, please consider engaging with the positions, or equivalent, listed in section 6 (2).

Lastly, please refer to the [Glossary of Terms](#) while completing these sections. The glossary will open in a separate window.

Category 1: Risks to the organization's assets and service delivery

1. Please describe how you / your team / department / organization defines risk?

PIEVC

2. What tools do you/ your team/ department/ organization use to understand, manage, and report on risk (e.g. risk register, facility condition reports)?

PIEVC

Risk Registry

FCI report via VFA

3. Who is responsible for determining and addressing risk within the organization?

This is a shared responsibility. I am responsible for climate risk. The Facilities Manager, Occupational Health and Safety and Emergency Management share some of these responsibilities. Other risks are managed by Security, HR, Executive Office.

4. Describe your organization's understanding of risks resulting from a changing climate.

A) Assets:

a. Describe the organization's effort to assess the risks and vulnerabilities resulting from a changing climate on its assets.

I) Has the organization completed a climate vulnerability assessment to understand risk to one or more assets?

Yes

II) If yes, please describe in as much detail as possible your process, participants, cost, outcomes.

PIEVC

Brief & Report

\$50K consulting + staff time on the order of 20 FTE days

Outcomes are most definitive for North Van Campus but included Squamish & Sechelt.

Study was limited to risk matrix + high level recommendations for moving forward.

Next step is deep dive into solutions (very complex), strategic choices and broader engagement.

III) If no, please describe barriers to conducting infrastructure climate vulnerability assessments.

Money and resources are a huge barrier. Our efforts were achieved with surplus funding on short timelines. This creates a risk for continuity of process and quality of outcome.

IV) Has the organization identified which assets in its portfolio are at the greatest risk from a changing climate now and in the future?

Our report has not received a full vetting. Each campus is vulnerable to different risks but we have identified a few extreme risks that need to be addressed. We do not have extreme risks on the short term horizon but have many extreme risks on the 2050 horizon.

b) Describe the organization's effort to assess supply chain interdependencies?

For example, has the organization assessed cross-dependent infrastructure that provides vital services to the organization and may transfer risk in the event of failure (i.e. road, water, waste water, power, telecommunications and transport supply lines)?

Minor - mostly inwardly focused. Electrical and bridge dependencies are very large and these have been identified. Communications infrastructure at the last mile is vulnerable to heat.

c) Describe the organization's internal policy and procedures for spare capacity or contingencies in the event of failure (e.g. for redundant power, water, telecommunication lines)?

Very little.

d)

Please rate your organization's readiness to report on risks to your assets from a changing climate

3 = Able to answer some but not all questions

e) What would your organization need to be able to provide this information?

Time and resource.

I have advocated for, and now see an effort to, implement the BC Hydro energy manager model for Climate Change.

While there is good evidence that this model is appreciated, and that some elements are being implemented, key elements are being left out including:

1. A central position dedicated to the task
2. Guidance on planning and implementation at a pace, volume and method that will be effective in replicating performance
3. A funding model

B) Service Delivery**a) Describe the organization's effort to assess the risks to its ability to deliver its services in a changing climate (i.e. health, education, etc.)?**

We blended service assets - like people, with hard assets, like buildings, when assessing risk from climate interactions.

This was nominally successful.

I) For example, has the organization completed a strategic climate risk assessment?

Yes

II) If yes, please describe in as much detail your process, participants, cost, outcomes.

All one process - happy to share the final report.

b) Has the organization's service delivery been impacted or modified because of an extreme weather event, such as a flood, wildfire, or wildfire smoke.

Yes

I) If yes, please describe in as much detail as possible here and provide information related to costs and if/how the organization was reimbursed under Category 5: Financial Implications of Climate Change.

I don't understand the connection - we were not reimbursed.

C)

Please rate your organization's readiness to report on risks to its service delivery in a changing climate.

3 = Able to answer some but not all questions

I) What would your organization need to be able to provide this information?

A better understanding of how to separate asset and service risk.

A professional certification program for climate change risk management practitioners.

Funding and a resource.

Category 2: Actions to reduce climate-related risks

1. Based on the organization's understanding of its risks resulting from a changing climate, please describe the actions, if any, the organization has taken to minimize those risks?

We have only identified risks, not truly mitigated them.

2. Are these risks currently considered and communicated in the organization's risk register?

I don't know

3. Is this risk register shared with the organization's capital ministry?

I don't know

4. Do any of your organization's core policies and procedures include climate risk management related activities (e.g. capital planning process, asset condition assessment procedures, business continuity planning, procurement policies, human resources)?

No

5. Has the organization determined which department(s) are responsible for climate risk management/climate resilience/climate adaptation and related responses?

Sort of ... I do it, but its not actually in my job description.

6. Does the organization have an individual, team, or interdisciplinary team tasked with climate risk management?

No

b) If no, who do you think needs to be involved?

Its like master planning - the entire organization needs to be represented as do suppliers and the community.

7. In efforts to reduce the organization's greenhouse gas emissions, does the organization consider how GHG reduction actions or strategies will enable or limit managing the risks resulting from a changing climate? (E.g. The implications of a warmer climate on future energy demand?)

Yes

8. In efforts to reduce risks from climate change to service delivery and assets, does the organization consider the implications of these efforts on greenhouse gas emissions reductions? (E.g. Low carbon options to meet future cooling demands?)

Yes

9.

Please rate your organization's readiness to report on actions to reduce climate risk.	2
----------------------------------------------------------------------------------------	---

10. What would your organization need to be able to provide this information?

Same as last page.

Develop a stable of experts (in house or externally), fund and require BC Hydro energy manager program "like" actions resulting in a plan, do, check cycle.

Category 3: Plans to continue making progress managing risks from a changing climate

1. Does the organization have a formal climate adaptation/climate resilience/climate risk management plan or strategy?

No

b) Are there other plans/strategies that include directly or indirectly climate risk management activities (e.g. business continuity plans, emergency management plans, climate action plans, capital asset management plans, stormwater management plans, etc.)?

Yes --- tests and investigations to further assess specific actions (tip of iceberg) and adjust development planning to avoid risks.

4.

Please rate your organization's readiness to report on plans to continue managing risks from a changing climate.	1 = Cannot answer questions
------------------------------------------------------------------------------------------------------------------	-----------------------------

I) What would your organization need to be able to provide this information?

I'm going to repeat myself here.

Category 4: Progress since the last report

After the first reporting year (still to be determined), PSOs will be asked in subsequent reporting years to provide an update on progress achieved for preparing for climate change risks.

1. If you are able, please let us know about any recent (since last CNAR survey) or planned actions your organization has taken to prepare for climate change risks.

We did the risk assessment less than 3 months ago and that draft is undergoing revisions.
We are investigating a few of the emerging risks.

We have taken steps to begin adapting by:

1. securing new electricity (power) supply

2. putting cooling on the roadmap

3. anticipating the need for reporting in 2020

Category 5: Financial Implications of Climate Change

1. Does the organization use cost benefit analysis when making financial decisions around reducing risks from a changing climate? (E.g. consider the costs and benefits of design features that reduce risks to new or renewed assets).

No

2. Has the organization experienced extreme weather events that resulted in adverse impacts to its assets, service delivery, or operational costs? For example, wildfire, wildfire smoke, extreme rain events resulting in local flooding, extreme heat or cold, etc.

Yes

a) If yes, please describe the event, date, adverse impacts, financial implications to assets and/or service delivery, and the mechanism used and source for reimbursement.

Seriously - this is not a reasonable question for our state of institutional readiness. Clearly the impacts were also sufficiently small to avoid more dramatic action.

Fire - near miss

Smoke - some health issues

Snow

3. Are the possible or realized costs of climate-related impacts tracked within your organization?

No

4. Does your organization know what the financial implications of risks resulting from a changing climate could reasonably be on its assets and service delivery?

No

5.

Please rate your organization's readiness to report on the financial implications of climate change.

1 = Cannot answer questions

a) What would your organization need to be able to provide this information?

The rapid wholesale development of a discipline and transformation of the operating behaviours & standards of our institutions.

IE the equivalent of 10 years of BC Hydro Energy Manager Program development.

Category 6: Organizational Awareness

1. Risk tolerance – Does the organization have an established tolerance for risks resulting from a changing climate to assets and service delivery?

I don't know

2. Please select the positions within the organization that were consulted in completing this survey?

Climate Resilience and/or Adaptation Leads; Facilities, Operations, and Maintenance Staff; Energy Managers; Sustainability Managers

If you said, "Other", please list:: Really due to the size of the organization - this survey was completed by one person with brief consultation with one other person.

3. Is there anyone who was either not consulted or not able to contribute that in your opinion should have been?

Yes

a) If yes, please provide the position title(s) and brief description of their barriers to participate.

Barrier: time and resource

Occupational health and safety and emergency preparedness manager.

4. How many hours were required to complete Part 2 -B of this survey?

two but I didn't do half the job I wanted to.

Survey Feedback:

1. What additional resources would be useful to improve your and/or your organization's capacity to report on preparing for a changing climate risks?

Prepare us for a survey of this magnitude and provide a vehicle for assigning sections and group work - or take it off line.

Change the CAS symposium to 2x annually

Add both engagement and technical professions.

Provide performance tied support for both resourcing and risk management implementation.

2. Please provide any additional information that you think would be useful to CAS in developing a program that supports public sector understanding, management, and reporting on climate related-risks.

Translate the BC Hydro Energy manager programs into two programs for Climate:

1. community

2. corporate/institutional