



University
of Victoria

2016 PROGRESS REPORT

SUSTAINABILITY ACTION PLAN: CAMPUS OPERATIONS 2014 - 2019

December 22, 2016

Table of Contents

Executive Summary.....	2
Introduction	3
1.0 Planning, Coordination and Administration	4
2.0 Engagement	6
3.0 Operations, Facilities and Services.....	9
3.1 Buildings.....	9
3.2 Computing.....	11
3.3 Dining Services	14
3.4 Energy	15
3.5 Grounds.....	19
3.6 Purchasing.....	21
3.7 Transportation	22
3.8 Waste	24
3.9 Water	27
Conclusion and Next Steps.....	29
Table 1: Goal indicators and descriptions.....	3
Figure 1: Data Centre Power Utilization Efficiency	12
Figure 2: Twenty Pound Paper Consumption	13
Figure 3: GHG Emissions	16
Figure 4: Electrical Energy Intensity.....	17
Figure 5: Natural Gas Energy Intensity	18
Figure 6: Campus Traffic Survey - Modal Split	23
Figure 7: Waste Diversion Rate.....	25
Figure 8: Waste per Campus User	26
Figure 9: Water Consumption.....	28

Executive Summary

In 2014, the Sustainability Action Plan: Campus Operations 2014 – 2019 was prepared to help guide the University of Victoria’s path toward sustainability across its various operational activities. The Plan built on the achievements of the first 2009 – 2014 Action Plan and was developed with input from students, staff and faculty, as well as community members. It outlines a set of actions for UVic and members of the campus community to undertake to advance sustainability and the goals outlined in the Plan. The provision of regular reports on Action Plan progress and in particular a mid term report on the five year Plan is also a requirement and of key importance in encouraging collaboration and a shared understanding of the levels of success and progress achieved.

This report reviews the actions that have been made towards Plan implementation in the past two years. It references the levels of progress that has been achieved in narrative form or with the use of quantitative indicators where data is available. Challenge areas are also highlighted where additional future effort is required to improve progress or to achieve clarity of outcomes for particular goals.

Work has been initiated on 31 of the 32 goals in the Plan. Seven goals are considered achieved. They include goals in Engagement where the Office of Campus Planning and Sustainability has created new programs for residence students, laboratory users, and staff and in Waste where improvements to hazardous waste management practices have been operationalized. The early achievement of goals in Energy related to electricity and natural gas consumption and related greenhouse gas emission reductions suggest the need to revisit the energy goals as part of the update to the Integrated Energy Master Plan and the setting of longer term energy goals for the campus.

Three goals were also identified that the university will be challenged to meet by 2019. They include developing systems to track demolition and construction waste from small projects, reporting on the environmental footprint of products procured through Purchasing Services, and achieving the university’s transportation modal split target of 70 percent non-single occupancy vehicle use at UVic. These challenges are focused on information gaps, in the case of demolition and construction waste and procurement goals, and in regional limitations and individual behavioural choices and preferences in the case of the commuting goal.

Actions to advance the other 21 goals in the Plan are actively underway with significant overall progress being achieved with the efforts of staff, students and faculty. Thanks is extended to the campus community and in particular members of the Sustainability Advisory Committee. They have been instrumental in directly implementing the Plan through their service delivery responsibilities or in offering general assistance, guidance and encouragement to the overall sustainability advancement efforts on campus.

Introduction

This report outlines the progress that has been achieved up to December 2016 on the goals in the *Sustainability Action Plan: Campus Operations, 2014 - 2019*. The Plan is the second five-year sustainability plan at UVic and is built on the success of the first Plan and the adoption of a university sustainability policy in 2009.

In 2008, the University of Victoria (UVic) engaged the campus and community in a consultation process to create a 2009 – 2014 Plan with a set of goals and actions related to how the university could pursue sustainability in its operations. That work was recognized with a Gold rating in 2014 in the Sustainability, Tracking, Assessment and Rating System (STARS) from the Association for the Advancement of Sustainability in Higher Education (AASHE). STARS is an independent, standardized framework developed to assess the overall sustainability of a post-secondary institution in its operations, teaching, research, planning, administration, engagement and investments. At the time, UVic was only the fifth university in Canada to achieve a STARS Gold rating.

In 2013 and 2014 the Office of Campus Planning and Sustainability further engaged with the campus community to create the 2014-2019 Action Plan. The Plan has 33 goals in 11 sections including an Engagement section, which was a topic not specifically referenced in the first Action Plan. This report shows that work has been initiated on every goal but one in the Action Plan. While there are still challenges ahead, overall, the university is well positioned to advance sustainability on campus through the direction outlined in the Action Plan.

The report format for each topic area includes a section introduction, a summary of the work performed on each goal, and a goal indicator. The indicators legend in Table 1 provides a description of each indicator and serves as reference of the progress achieved for the 32 goals outlined in the Action Plan. The Plan can be referenced for complete detail on the various topics and their related goals and actions.

Table 1: Goal indicators and descriptions

Not Started		Work has yet to be undertaken but the goal is planned for completion by the end of 2019.
In Progress		Work has been undertaken, and the progress achieved is relative to the extent of the indicator colour. In Progress indicators show goals that are estimated to be 25 percent, 50 percent, or 75 percent complete.
Completed		Goal has been achieved.
Challenge		Factors identified in the report put the goal at risk of not being achieved by 2019.

1.0 Planning, Coordination and Administration

Mission: *To create a campus culture that provides for sustainability to be integrated into operational, administrative and planning processes, and advanced through collaboration and coordinated decision-making across the university.*

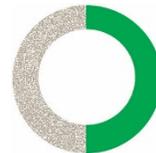
Staff in the Office of Campus Planning and Sustainability (Sustainability Office) and our colleagues across the university have continued the work to integrate sustainability into administrative practices. This includes the University of Victoria Foundation, which made significant headway on enhancing responsible investment policies since 2014. The Sustainability Office also continued its reporting efforts and enhanced transparency through online communications. Integrating sustainability into other institutional planning areas is in process and work remains for this goal to be fully achieved by 2019.

Goal 1.1: Integrate sustainability criteria into annual service and strategic plans for operational and service departments and review on a regular basis throughout the year.



Work to integrate sustainability in the Vice President Finance and Operations (VPFO) portfolio service plans is ongoing. Some Departments have begun to build in sustainability activities into their planning documents. Structurally, however, including sustainability criteria is not a formal requirement in preparing annual Service Plans. Work also continued on the renewal of the University of Victoria Sustainability Policy, which affirms the importance of integrating sustainability throughout the university. The policy was slated for mandatory review in March of 2016 and an updated draft of the policy will be presented to the Board for approval in January 2017.

Goal 1.2: Provide regular reports to the campus community on sustainability initiatives and Action Plan progress.

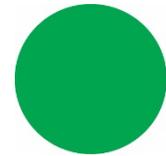


The university prepares an annual Carbon Neutral Action Report. The document, which reports on the carbon footprint of the university, and mitigation and reduction measures, is a key reporting activity of the Sustainability Office. Other topic specific reports have been completed on various actions found in the Action Plan. The Sustainability Office has also employed social media, a semi-weekly newsletter, and our website to report out to the campus community.

The Sustainability Office also concentrated reporting efforts on the preparation of implementation plans. These implementation plans, which were created in conjunction with the departments relevant to each goal and were shared and discussed through the multi-stakeholder Sustainability Advisory Committee. Implementation plans have allowed individual operational units to schedule various activities associated with the Sustainability Action Plan.

Along with this 2016 midterm report, a report will also be prepared upon the completion of the fifth year of the Action Plan in 2019.

Goal 1.3: Enhance responsible investment policies to reflect industry best practices.



Beginning in 2011, the University of Victoria Foundation Board (the Board) began the process of documenting its investment beliefs. Since 2015, the Board has expanded its Summary of Investment Beliefs, as related to Responsible Investing, to include the requirement that the Foundation's investment managers (1) provide a report on responsible investing activities each year; and, (2) that the report also include a record of the manager's proxy voting activity. In an effort to be more transparent about these initiatives, the Foundation's first Responsible Investing Report was included in the 2014-15 Annual Report. Environmental, Social and Governance (ESG) principles are incorporated into the investment decision making process through proxy voting which demonstrates the Board's commitment to responsible investing. The Board has delegated voting rights to be exercised by the investment managers. Equity investment managers are expected to vote all proxies in the best interests of the Foundation and to remain active participants within their equity portfolios.

A prevalent topic in recent years throughout the global investment community is the divestment of fossil fuel related securities. The Board considered several requests to divest from the Foundation's investments in fossil fuels. The Board shares the concerns of many in the community with regards to reducing the negative impact of CO₂e emissions on the environment, but does not believe divestment is a prudent approach to achieving this end nor in fulfilling its fiduciary obligations. The Board respects the importance of responsible investing as it relates to long term investment returns and will continue to oversee and evaluate its investment managers and fulfill its responsibility as a United Nations Principles on Responsible Investment (UNPRI) signatory.

The Board continues to explore best investment practices based on the use of ESG principles by requiring that the Foundation's investment managers to provide a report on responsible investing activities each year including a record of the manager's proxy voting activity. These ESG issues will be incorporated into the investment decision making process through guidelines identified in the Foundation's signatory to the UNPRI.

2.0 Engagement

Mission: *To provide opportunities for students, staff, faculty and community members to learn, share knowledge and collaborate through coordinated programs of engagement, events, training, education and celebration.*

The Sustainability Office has given particular attention to engagement with the campus community since 2014 as it was identified as a separate Action Plan topic. These efforts were enhanced by the pilot Campus Sustainability Fund, which funds stakeholder driven sustainability projects connected to the Action Plan. Collaborating with various campus partners, including UVic Communications and Marketing, also helped enhance the Sustainability Office's engagement work. The Sustainability Office created new programs that built on the successful Sustainability Action Teams framework, and enhanced existing connections with community organizations to further our Action Plan Goals.

Goal 2.1: Develop and implement programs and activities that assist the campus community in contributing to the achievement of sustainability goals.



Building on the success of the Revolving Sustainability Loan Fund (RSLF), the university created the Campus Sustainability Fund to empower members of the university community to create stakeholder-driven projects that further the Sustainability Action Plan and advance leadership in sustainability, whether providing a direct financial payback, or not. The Fund provides one-time allocations to projects that focus on energy or water savings, sustainability awareness or learning opportunities. To date, since the fund's establishment in February 2016, seven projects have received funding of approximately \$27,000.

Goal 2.2: Work with campus partners to increase the awareness of local and global sustainability issues within the campus population and the surrounding community.



Communications

The Sustainability Office collaborated with UVic Communications and Marketing to create a communications plan in 2015 to connect students, staff, faculty and the general public to sustainability news and information using Facebook, Twitter, Hootsuite and our website and newsletter to share and promote office activities. As of November 2016, the Facebook page has over 600 likes and the Twitter page has almost 1,600 followers. Further, collaboration with Communications maximized the reach of university sustainability content through UVic's primary social media accounts, and produced a video in the fall of 2016, entitled *Sustainability in Action at UVic*. The video profiled various campus partners through engaging web content.

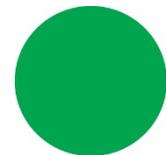
The UVic Sustainability website has gone through a series of updates since 2015. These included an upgrade to the current UVic Edge web-template, content prioritization, and the inclusion of a Featured Stories component.

Awareness Projects and Partners

The Sustainability Office has been working with the Division of Student Affairs since 2014 to further integrate sustainability into new student orientation. Since then, the Sustainability Office has organized over 12 sustainability themed events for New Student Orientation Week, a week-long event that has engaged hundreds of students. Furthermore, at the President's BBQ during New Student Orientation Week in 2015, the Facilities Management Department supported the success of a 91 percent waste diversion rate, an impressive number for an event that fed nearly three thousand students. The Sustainability Office has also worked with UVic Human Resources to highlight campus sustainability efforts for new employees during their orientation sessions.

The Sustainability Office has worked with many different campus partners to increase awareness of local and global sustainability issues within the campus population and the surrounding community. They include SPOKES, the Campus Community Garden, BC Transit, the Bowker Creek Initiative, Engineers without Borders, the UVic Free Store and Food Bank, Community Cabbage, and the Pacific Institute for Climate Solutions (PICS). Other campus partners that the Sustainability Office collaborates with include the Facilities Management Department, Parking and Transportation Services, Food Services, Purchasing Services and the Centre for Social and Sustainable Innovation in the Gustavson School of Business.

Goal 2.3: Create new programming for the Sustainability Action Team program with offices, labs, and residences.



The Sustainability Office has expanded the successful Sustainability Action Team program. The program now has three components; the Res Green Team, the Green Labs Program, and the Staff Sustainability Network.

Student Residence Green Team

In 2015, the Office launched the Res Green Team to provide support for students living in UVic residence and who want to engage in sustainability. Since then, the Res Green Team has connected students across campus in a variety of sustainability related volunteer activities. The Res Green Team also identifies campus sustainability opportunities and implements their own initiatives. Each year, the Res Green Team volunteers engage hundreds of their peers on campus through their activities.

Green Labs Program

In early 2014, UVic piloted a 'Green Labs Program' focused on efficient fume hood use in chemistry labs. The program encouraged lab users to shut the fume hood sashes, and toggle the hoods to "setback" mode when they leave for the day. Since program development, night setback has increased by more than 50 percent. This practice has reduced the demand on building ventilation and heating systems. Other green labs initiatives, involving chemical substitution, lab glassware recycling, and mercury thermometer replacement, have also been implemented since 2012.

Staff Sustainability Network

The Staff Sustainability Network (SSN) brings together more than 40 staff leaders who are passionate about sustainability from over 20 different departments on campus. Monthly meetings, held since August 2015, help members advance their leadership skills and collaborate on sustainability related issues. The Network's first major campaign was the 21 Days to Green Your Routine challenge during the summer of 2016. Each of the participants adopted one additional sustainable action to repeat every day during this 21-day event. Over 130 staff and faculty members from across campus signed up and committed to addressing green challenges in their offices.

Goal 2.4: Engage the local community in the university's sustainability initiatives and develop programs to work collaboratively on issues of mutual interest and benefit.



The Sustainability Office coordinated with several departments to donate more than \$3,000 to the Capital Regional District's (CRD) Ready, Set, Solve! Program. It aimed to connect inter-disciplinary teams of students from post-secondary institutions with local government, non-profit organizations and institutions to address climate related challenges and provide real solutions for the region. In all, the program engaged thirteen student teams from UVic, most of which were made up of undergraduates, in valuable experiential learning projects. Project partners included the CRD, the Township of Esquimalt and the Greater Victoria Compost Education Centre.

The Sustainability Office also maintains relationships with cycling related organizations in the community. UVic provides a \$10,000 sponsorship each year to the Greater Victoria Bike to Work Society to help promote cycling. The Bike to Work Week/Day events mobilizes those already commuting by bike as leaders in the workplace and each year draws new participants into commuter cycling. Hundreds of UVic students, staff, and faculty participate each year, which helps to increase the cycling mode share on campus. Similarly, the Sustainability Office has collaborated with the Greater Victoria Cycling Coalition, who advocate for better cycling infrastructure and help educate the cycling community in the region. This included promoting events, and sharing and distributing information about issues of mutual interest and benefit.

3.0 Operations, Facilities and Services

3.1 Buildings

Mission: *To construct, renovate, maintain and operate campus buildings to green building standards and practices.*

Green Building practices are the norm at UVic. The work done since 2014 shows that the university remains committed to constructing Leadership in Energy and Environmental Design (LEED) Gold certified buildings. The Facilities Management Department, which is responsible for the university's built environment, have begun integrating these concepts into updated green building design and construction guidelines. Facilities Management has also developed a green cleaning policy since 2014 and other green maintenance policies will be considered in the future. Construction and demolition waste monitoring, however, is a challenge. While construction waste from large building projects is tracked rigorously, accurate waste information for smaller projects, including demolition projects, is more difficult to acquire.

Goal 3.1.1: Ensure all new buildings and major renovation projects achieve the standard of LEED Gold or equivalent certification.



LEED Gold buildings

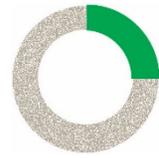
Since 2007, UVic has maintained a strong architectural, design, and green building construction track record. All new academic and administrative buildings constructed since 2007 have achieved the Leadership in Energy and Environmental Design (LEED) Gold building certification. The latest addition to campus, and the only new building constructed since 2014, the Centre of Recreation, Athletics, and Special Abilities (CARSA) has been built to meet the LEED gold standard. Its green features include its storm water bio-swales, state-of-the-art LED high-bay field house lights, use of reflective roofing material to reflect solar radiation, and the geo-thermal heat exchanger— which is a campus first. CARSA is currently in the process of being certified LEED gold.

Major renovations

A major renovation to a building is defined in the Plan as one which involves costs that exceed 75 percent of the original building cost. The largest building renovation on campus since 2014 was the addition to the Continuing Studies building. The total initial cost of the building in 2004 was \$13.8 million, and the total cost of the 2016 addition was \$13.25 million. Although the construction of the addition utilized green building techniques and materials, the project was not LEED certified as its

budget did not provide for major renovation work to the existing building's envelope and mechanical and ventilation systems.

Goal 3.1.2: Utilize sustainable green building practices for all renovation and building construction projects that are below the threshold for mandatory LEED Gold or equivalent certification.



The Facilities Management Department in 2015 initiated a renewal of its Facilities and Infrastructure Technical Standards (FITS). This process involved updating links to out-of-date sustainable campus guidelines. As of July 2016, this process has completed a review of all UVic policy documents which refer to green building design and construction on campus. Facilities Management will identify a strategy to capture and integrate construction and sustainability design priorities and performance based criteria into the FITS document by the end of 2017, with implementation in 2018.

Goal 3.1.3: Utilize sustainable operational and building maintenance practices in all campus buildings and facilities.



Green Cleaning

Late in 2014, the Customer Service and Program Integration unit within the Facilities Management Department formalized its commitment to Green Cleaning through the preparation of a Green Cleaning Policy. The policy was developed based on Green Seal CS-42 Environmental Standard for Cleaning Services and LEED Canada for Existing Buildings: Operations and Maintenance Rating System 2009 and includes:

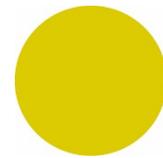
- Purchasing of sustainable cleaning equipment and products.
- Applying Standard Operating Procedures for cleaning techniques, routines and frequencies.
- Consideration for building occupants with sensitivities.
- Promotion and improvement of hand hygiene.
- Protocols for the storage, safe handling and spill response for cleaning chemicals
- Training staff on the disposal and recycling of cleaning chemicals, and packaging.
- Process for program evaluation and improvement.

Building Maintenance

The Maintenance and Operation unit in the Facilities Management Department maintains and improves the efficiency of building systems. However, relatively few of the maintenance program elements have changed since 2014. LEED Canada for Existing Buildings: Operations and Maintenance Rating System 2009 is the most comprehensive guide for green building maintenance programs. Utilizing this

framework, the Sustainability Office has initiated preparation of a report on guidelines and best practices for green maintenance. It will be submitted to the Maintenance and Operations unit by the end of 2017 and will inform an updated sustainability maintenance and operation policy.

Goal 3.1.4: Develop systems that provide for the reduction, measurement and reporting of construction and demolition waste.



Construction waste is tracked for all new building projects that are LEED certified, and they typically achieve greater than 90 percent waste diversion. No systems, however, have been put in place to monitor and report on waste produced by smaller projects, including demolition. These smaller non LEED certified projects often are undertaken by subcontractors, who are not in a position to track waste from individual projects as they work at multiple worksites each day. It is recognized however that construction and demolition waste is regulated at the regional level which encourages recycling and requires that hazardous items, like asbestos, drywall, thermostats and recyclables be removed.

A review of post-secondary institutions that track demolition waste is scheduled to be conducted in 2017 by the Sustainability Office. A report will be developed based on the review and submitted to the Facilities Management Department for consideration, and with the potential inclusion in the UVic Facilities and Infrastructure Technical Standards document.

3.2 Computing

Mission: *To deliver computing services and infrastructure that meets the teaching, research and administrative needs of the campus community, while advancing the sustainability goals of responsible procurement, energy management and waste reduction.*

University Systems has enhanced their sustainability efforts since 2014. Perhaps most significant was the efficiency increases University Systems and the Facilities Management Department were able to achieve in the Enterprise Data Centre (EDC2). Other efforts are on-going, such as the trend of academia moving away from paper use and toward digitization, and the continued purchase of only the greenest and most energy efficient personal computers for staff, faculty, and student computing facilities.

Goal 3.2.1: Maximize the energy efficiency of information systems infrastructure across campus.

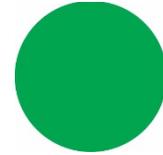
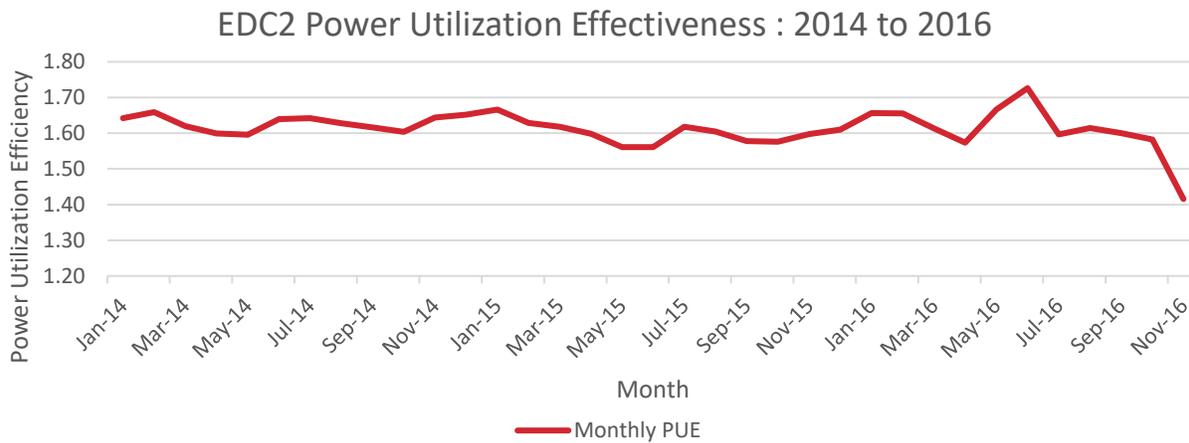


Figure 1 below shows a recent decrease in the Power Usage Effectiveness (PUE), which is the industry standard metric for measuring data centre efficiency. PUE is calculated by dividing the total energy use of the ECD2 facility (including lights, the battery backup, and the energy used to control the climate in the facility) by the energy use of the servers and other computing devices used in the EDC2. As a result, PUE is a ratio that will not be less than 1. One study from 2009 indicated that average industry PUE is 1.79.¹

Figure 1: Data Centre Power Utilization Efficiency



Since January 2014, EDC2 has been varying between a PUE of 1.5 and 1.7. However, funding from the Canada Foundation for Innovation (CFI) allowed the university to advance upgrades to expand research computing while increasing the ECD2 efficiency. The expansion involves adding 550kW to the data centre and consolidating workloads across campus onto bigger servers, thus lowering non-computing related energy consumption. The expansion will enable researchers to store, analyze, and mine big data with great efficiency. With recent efficiency improvements which were commissioned in late 2016, it is expected that the Centre will achieve a consistent PUE of 1.4 or lower. No further efficiency work is planned on the EDC2 prior to 2019

¹ Pelley, S., Meisner, D., Wensch, T.F., and Van Gilder, J.W. (2009). Understanding and abstracting total data center power. In *Proceedings of the Workshop on Energy-Efficient Design*, Austin, TX.

Goal 3.2.2: Develop systems and procedures that help reduce paper use in computer labs, offices and in administrative procedures across the university.

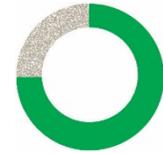
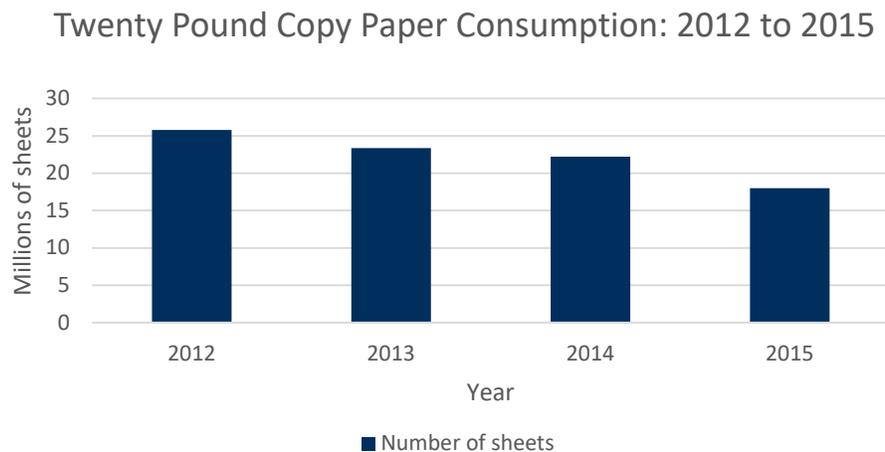


Figure 2 below shows a 30 percent decrease of twenty-pound paper use since 2012 and a 19 percent decrease between 2014 and 2015. Twenty-pound copy paper is the vast majority of paper used on campus. The downward trend in its use is strongly indicative of the paper use trend overall, a cause of which appears to be a trend in academia moving toward increased digitization. For example, CourseSpaces, the UVic learning management system (LMS) is used to complement face-to-face courses or deliver courses completely online. The use of CourseSpaces has increased approximately 15 percent between the 2015 and 2016 winter terms.

Figure 2: Twenty Pound Paper Consumption



Administratively, UVic recently launched the connect.uvic.ca site, which enables virtual file sharing and collaboration. UVic Connect is the successor to Sharepoint and the upgrade provides a more functional version of the software. Between the program launch in the fall of 2015 and July 2016, almost nine percent of UVic staff have attended Connect training, many of whom have become site administrators. In addition, the Facilities Management Department is digitizing of their service request system, which could eliminate the printing of approximately 40,000 sheets per year.

Goal 3.2.3: Ensure that green manufacturing standards and energy saving criteria are applied to all computing services purchasing decisions (EPEAT Gold and Energy Star rated).



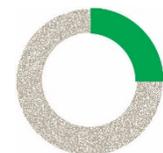
All new computer purchases and installations at UVic are Electronic Product Environmental Assessment Tool (EPEAT) Gold and Energy Star rated. In 2015, UVic Systems installed 100-150 new computer lab work stations (Computing Facilities) and 100-125 new work stations (Desktop Support Services supported departments). The benefits of the new work stations include technical currency and compatibility with the newest operating systems/software/peripherals, better performance, lower repair costs, improved security and higher energy efficiency. For example, 111 work stations were replaced this year in the Computer Help Desk (CHD) Computing Facilities with an average energy savings of 40 percent over the approximately five-year-old work stations that were replaced. The move to Solid State Drive (SSD) technology over the older spinning hard drives makes up the majority of these savings.

3.3 Dining Services

Mission: *To be an institutional model of sustainability, leading the way through innovative local purchasing initiatives and operational sustainable practices that minimize our carbon footprint and provide high quality, ethically sourced, nutritious and diverse food options that sustain the health and wellbeing of our community.*

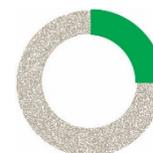
UVic Food Services continues to advance sustainability in its operations. Approximately 50 percent of the food purchased by Food Services in 2013 was considered locally sourced and they have since maintained that local purchasing preference. Enhancing waste reduction and diversion efforts in campus food outlets will require innovation and new approaches. The Sustainability Office and Food Services are currently examining strategies to advance these practices.

Goal 3.3.1: Benchmark and increase the number of local food producers and suppliers and maintain an active preference for Island produced products.



UVic Food Services supports their local food purchasing practices by maintaining an active preference for products produced on Vancouver Island. However, an inventory and benchmarking of local producers that UVic purchases from has yet to be developed.

Goal 3.3.2: Enhance waste reduction and diversion practices in campus food outlets.



UVic Food Services has various waste reduction and diversion practices in place for their 12 food outlets on campus. Food Services removed waste bins in their campus outlets rely on staff to sort and dispose of waste produced in association with their operations. This has resulted in minimal levels of landfill waste generated from their operations.

Enhancing these practices would require the introduction of new innovative waste reduction strategies, such as replacing disposable “to-go” food and beverage containers with returnable containers. Other strategies include innovative outreach and communication techniques to encourage Food Service patrons to select the reusable option, whenever possible. Discussions with Food Services have been initiated, but as of yet, no specific waste reduction strategies have been selected.

3.4 Energy

Mission: *To maintain a campus that fosters an energy conservation culture that utilizes innovative technologies and promotes occupant engagement to continually improve building performance, as well as providing a comfortable learning and work environment.*

Twenty-one university buildings have undergone energy retrofits since 2010, resulting in a decreased greenhouse gas emissions and energy intensity at UVic. The significant energy reductions can be attributed to the energy management program run by the Facilities Management Department. Two out of four goals were achieved in this section of the Plan by 2015, thus highlighting the need to establish new goals.

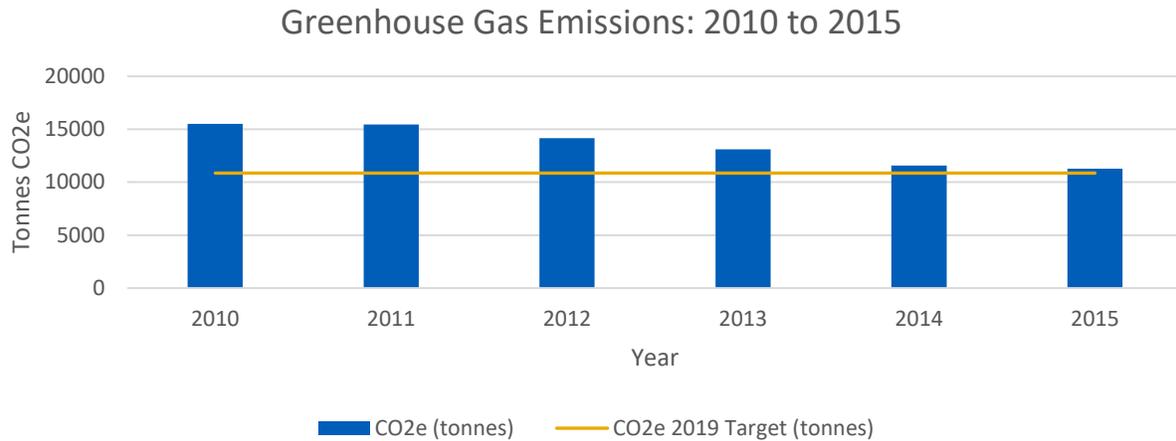
Goal 3.4.1: Achieve a total institutional greenhouse gas emissions reduction of 30% by 2019, relative to 2010 as the baseline year.



In 2015 university greenhouse gas (GHG) emissions decreased to 27 percent below the 2010 baseline. This decrease demonstrates significant advancement toward the Action Plan goal of a 30 percent emissions reduction by 2019. Figure 3 below shows the decreasing annual emissions plotted against the goal. The trend is a result of energy conservation practices and retrofit work that began in 2010 through the university’s energy management program. The program also received assistance from BC Hydro,

Fortis BC and financial support through the Ministry of Advanced Education’s Carbon Neutral Capital Program (CNCP).

Figure 3: GHG Emissions



Goal 3.4.2: Reduce campus electricity consumption intensity by 8% by 2019, relative to 2010 as the baseline year.

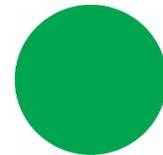
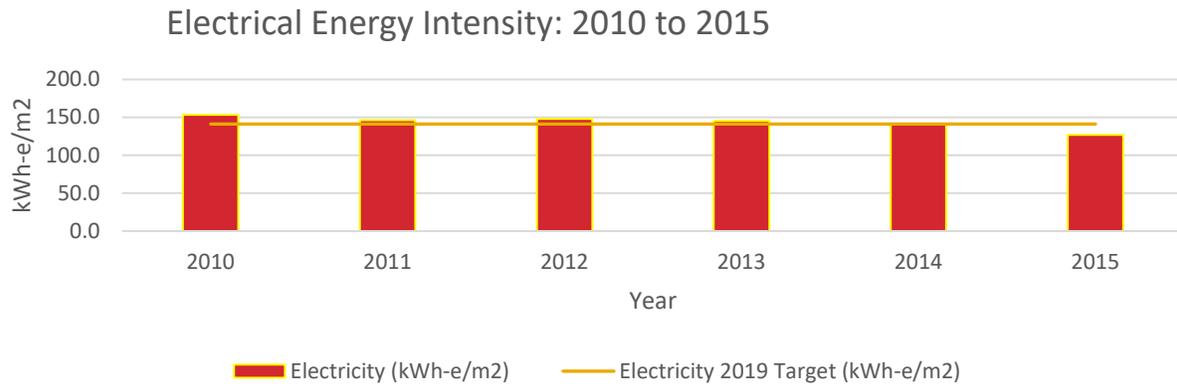


Figure 4 below shows a downward trend in hydro electric energy intensity at UVic. Energy Intensity is a benchmarking measurement of energy use indexed against interior building floor area and is expressed as the number of kilowatt hours consumed per year to power a square meter of campus. The Action Plan goal also provided for the electrical energy data to be “weather corrected for the 4th quarter of each fiscal year.” The electricity consumption intensity reported in Figure 4 is not weather corrected, as only 12% of the UVic building portfolio utilizes electricity for space heating. Seasonal weather variation, therefore, has a marginal effect on UVic’s overall electricity consumption.

In 2014, the campus electricity consumption intensity was reduced by 9 percent, relative to 2010. Based on this uncorrected data, the Action Plan goal was achieved in 2014. However, there will be a need to revisit the electrical consumption intensity goal as part of the final reporting on the Action Plan in 2019. In addition, further discussion is required on setting new updated electricity use goals for the 2016 – 2019 period that align with the campus Energy Master Plan framework and campus energy efficiency efforts.

Figure 4: Electrical Energy Intensity



Goal 3.4.3: Reduce campus natural gas consumption intensity by 12% by 2019, relative to 2010 as the baseline year.

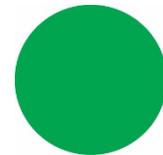
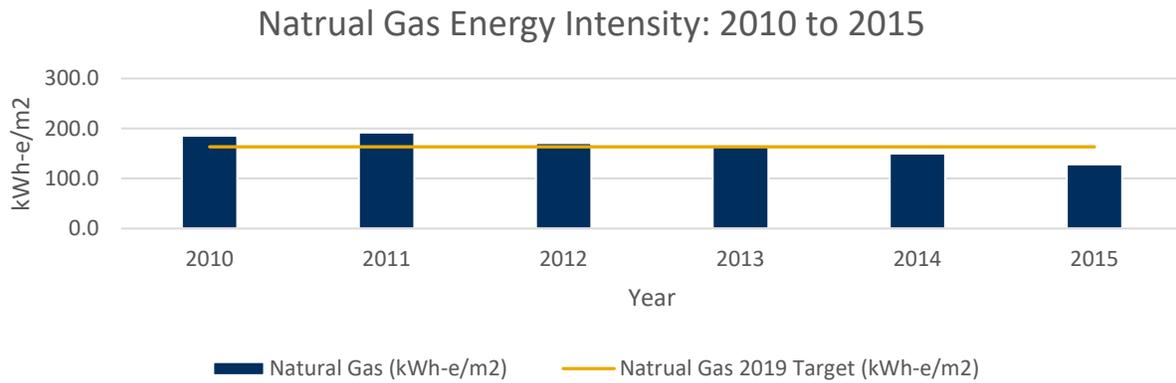


Figure 5 below shows decreasing natural gas energy intensity at UVic since 2011. Natural gas consumption intensity is a benchmarking measurement based on the building energy performance index (BEPI) of e-kwh/ m2 of campus floor space. The Action Plan goal also provided for the natural gas energy data to be “weather corrected.”

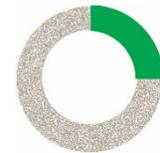
In 2014, the campus natural gas consumption intensity was reduced by 19 percent, relative to 2010. The reported natural gas consumption intensity data, however, has not been weather corrected. Weather corrected data is now rarely reported in the BC Energy Management industry due to concerns that the assumptions involved in performing the corrections are difficult to justify.

Based on this uncorrected data, the Action Plan goal was achieved in 2013 at the time the current Action Plan was being prepared. There is a need to revisit the natural gas consumption intensity goal for annual reporting on natural gas use in 2016, 2017 and 2018 and in the work required to establish a new goal for the university that aligns with industry standards and the work to be undertaken to update the campus Energy Master Plan. It also highlights the importance of having comprehensive up to date energy data available as part of the goal formulation process.

Figure 5: Natural Gas Energy Intensity



Goal 3.4.4: Implement renewable energy demonstration projects on campus that help reduce greenhouse gas emissions and overall energy use.



The Centre for Athletic, Recreation, and Special Abilities (CARSA) opened in May 2015. The facility was built to the LEED Gold Standard and includes a geothermal heat exchange system. The geothermal technology is able to use the ground as a thermal battery, dumping heat from the building in the summer and extracting heat from the ground in the winter months. The geothermal system helped reduce the carbon footprint by offsetting the amounts of natural gas needed to heat the facility.

In the spring of 2015, a proposal to replace the nonfunctioning solar thermal panels on the McKinnon building was accepted by the Province of BC's Carbon Neutral Capital Program. However, the project was revised when a pre-implementation study indicated that it would be significantly more expensive to install and would result in a simple return of investment payback of more than 40 years.

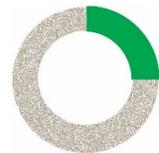
Concurrent with the renewal of the UVic Campus Plan, the Facilities Management Department commissioned a Sustainability Site Requirements Study. This study outlined several possible locations that could be considered in the future for the incorporation of solar photo-voltaic and solar thermal panels, and geexchange into the campus energy system.

3.5 Grounds

Mission: *To create and maintain a campus landscape that minimizes environmental impacts, enhances biodiversity and maintains aesthetic values.*

The Facilities Management Department manages the university's grounds and stormwater outflows. In 2016 the Department began the process of updating the 2004 stormwater management plan. Since 2014, the Sustainability Office has also worked closely with the Grounds Unit in Facilities Management to facilitate Campus Sustainability Fund projects that advance campus biodiversity, and to formalize a UVic Integrated Pest Management plan.

Goal 3.5.1: Reduce the quantity and improve the water quality of stormwater on campus that enters the local drainage and stream networks.



The Action Plan outlines the need to update the 2004 Integrated Stormwater Management Plan, which is the main mechanism by which the University will affect stormwater quality and quantity. The Grounds unit within the Facilities Management Department has indicated that it will be completed by 2019. The Facilities Management Department has also undertaken the preliminary work of inventorying the “soft assets” on campus, such as trees.

Goal 3.5.2: Protect and manage the ecological diversity of the natural areas on campus and enhance the use of native species in campus landscape management.



The 2016 UVic Campus Plan divides the natural areas on campus into two broad categories:

1. Protected areas including Bowker Creek, Finnerty Garden, South woods, Cunningham woods, and Mystic Vale; and,
2. Expanded natural areas, which are the remaining areas encircling the university between Cedar Hill cross road and Mackenzie Avenue.

The Campus Plan states that when landscaped these areas will prioritize native plantings, with the exception of Finnerty Gardens. When undeveloped, these areas are to be ecologically restored. Three projects approved through the Campus Sustainability Fund in 2016 are anticipated to produce meaningful advances to campus biodiversity.

1. The invasive species management program is developing a plan to provide coordination for the removal of invasive species on campus. The program involves the development of an Invasive Species Management Plan, identifying priority areas for action, including the identification of

sensitive ecosystems on campus where eradication of invasive species is advisable, and management practices for other areas where the invasive species will be managed. The plan also includes developing a program to engage and expand the existing Restoration Volunteer Network to facilitate the removal of invasive species.

2. The Sustaining Sensitive Ecosystems on Campus project builds on the initial Invasive Species Management project by creating individual management plans for the priority sensitive ecosystems on campus. These plans will include activities that provide learning opportunities for students with a focus on their efforts to restore sensitive ecosystems. This project also intends to focus restoration plans for areas of campus and produce curricular materials that enable classes to learn about these sensitive areas and engage in their restoration.
3. The Edible Landscapes project's goal is to link food security, student health, and restoration initiatives on campus. The student group produced a proposal in the fall of 2016 for an edible landscape area on campus that was feasible, ecologically sound, and that reflected the input of affected stakeholders.

Goal 3.5.3: Develop a formalized Integrated Pest Management Plan as part of the overall grounds management system.



A formalized pest management plan is an industry best practice, and while the Facilities Management Department's Grounds Unit has yet to formalize a plan, they currently utilize the Integrated Pest Management for Turf Grass Managers document to guide the interaction with campus pests. It includes pest control procedures with an emphasis on pruning, mulching, and managing soil conditions to control pests without needing to resort to the use of pesticides.

UVic strictly controls the use of pesticides on its grounds and reports the use of chemicals as per the BC Integrated Pest Management legislation. An Integrated Pest Management Plan, which is scheduled to be developed in 2017, will formalize and update the grounds pest management procedures on campus.

3.6 Purchasing

Mission: *To provide purchasing and supply management services to the campus community that achieve best value and apply triple bottom line principles to procurement initiatives, incorporating financial, social, and environmental considerations to supply management decisions.*

UVic Purchasing Services facilitates the evaluation of products and contracts as part of their procurement processes and is committed to using triple bottom line (TBL) principles. Purchasing is evaluating its current TBL practices and is exploring further areas where TBL can be incorporated. Developing reporting systems on the environmental footprint of procurement activities, however, has been identified as a challenge. Data on the entire environmental footprint of products is not universally available, thus creating a reporting system by 2019 may not be an achievable goal.

Goal 3.6.1: Review purchasing procedures and develop refinements that assist in furthering the incorporation and formal application of triple bottom line sustainability criteria in procurement decisions.



Many of the purchasing practices utilized by Purchasing Services are influenced through sustainability standards by adhering to sustainability certifications and designations, such as FairTrade, or Certified Organic in the food industry, Energy Star Ratings for appliances or Electronic Product Environmental Assessment Tool (EPEAT) Gold for electronics. In addition, evaluation criteria used by UVic Purchasing currently includes category scoring criteria that complies within the triple bottom line framework.

A project is under way for UVic Purchasing Services to identify the triple bottom line initiatives and activities that are in currently in practice or able to be integrated into purchasing processes, either within the UVic Purchasing Office independently or with cooperative initiatives through our involvement with Administrative Service Delivery Transformation (ASDT) in its purchasing initiative BCNet.

Goal 3.6.2: Further develop reporting systems that include information on the source and environmental footprint of goods and services purchased by the university.



Information regarding environmental footprints is available to differing degrees within the consumers' market. Many products such as paper, natural gas, fleet and others have industry supported reporting mechanisms. However, the range of products and services supplied by a diverse range of vendors to the university makes obtaining this information a significant challenge.

Although the Sustainability Office is responsible for reporting on some aspects of UVic's environmental footprint through the annual Carbon Neutral Action Report (CNAR); however, the CNAR report covers only the emissions produced by UVic for buildings, paper and fleet vehicles. Therefore, the purpose of this goal is to increase the transparency relative to all UVic purchases.

UVic Purchasing is currently not in a position to capture, validate nor report on source and footprint information with any degree of certainty. Work is scheduled to continue on a methodology to capture and report on the environmental footprint of purchased goods, where available, but the extent to which the goal may be achieved by 2019 and the final report on the Action Plan is open for further assessment.

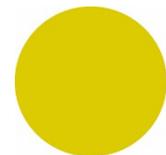
3.7 Transportation

Mission: *To offer sustainable travel options for every campus community member and visitors, and to act as a hub in a regional sustainable transportation network.*

Since UVic conducted its first comprehensive travel mode study in 1996, the portion of persons choosing to travel to campus by means other than the single occupancy vehicle (e.g. transit, cycling, walking, and carpooling) has increased from 42.5 percent to 60.3 percent. This increase is the result of a number of successful Transportation Demand Management (TDM) program activities including the student UPASS program, the employee subsidized bus pass program, and the UVic Carshare program.

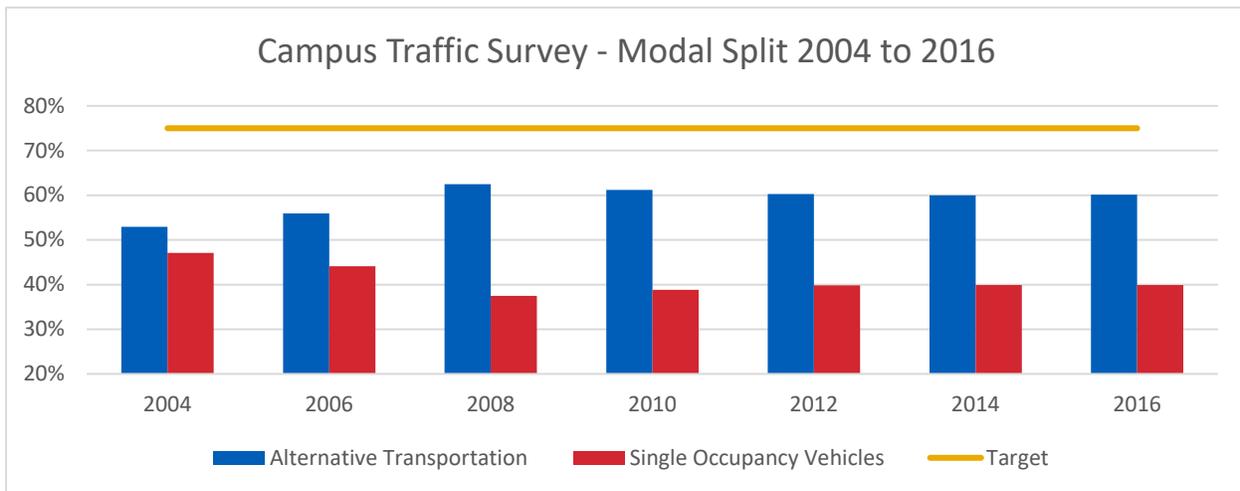
Achieving the mode share target goal, however, has been identified as a challenge because single occupancy vehicle use and other travel modes have stabilized over the last eight years. The university is also committed to improving the fuel efficiency of its fleet and the Sustainability office is examining potential options.

Goal 3.7.1: Increase the use of transit, cycling, walking and carpooling to 70% of the transportation modal split by 2019.



The travel modal split of approximately 60:40 (non-auto-drivers: auto-drivers) has stabilized over the last eight years and changes for the most part were minor. Figure 6 below provides a summary of the modal split for 2016 and a comparison to previous year's survey results.

Figure 6: Modal Split



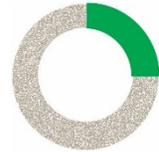
Limited progress in this goal has been achieved. Travel mode trends are essentially no different from the 2012 survey with the fluctuations from year to year that are to be expected. The mode shares are consistent with those in the region. Although there has been little change in the overall modal split between auto-drivers and other forms of transportation since the last survey, many activities that fall under the TDM (Travel Choices) program reflect a high level of engagement across campus in sustainable transportation measures. For example, on average 650 employees participate each month in the subsidized Employee Bus Pass program, most undergraduate and graduate students have a Universal Bus Pass (UPASS), there are approximately 3,000 bike parking spots available for use with 125 new spots scheduled to be installed at various locations around campus, 85 bike lockers rented, over 130 participants in the UVic Carshare program, a newly created Resource Coordinator position in SPOKES, and an increased profile and use of the Campus Bike Centre.

There are several on-going and annual campaigns and events in place to encourage and support various travel modes outside of the single occupancy vehicle, such as the popular Bike to Work Week, promotion of the new cyclist/pedestrian #sharethespace campaign, and cycling safety Don't Smash Your Pumpkin and Lighten Up! campaigns. Events include support of the annual SPOKES Bike Drive and bike repair workshops, significant components in Sustainability Week, tabling at new student orientation events and Connect U.

Further engagement and outreach activities include the involvement in and collaboration with committees and groups like the UVic Cycling Advisory Committee, Staff Sustainability Network, the Sustainability Advisory Committee, the Greater Victoria Cycling Coalition, the Saanich Active Transportation Advisory Committee, CRD's People Power Advisory Committee and BC Transit, which offer support and integration of sustainable transportation options to and from campus. Student engagement also plays an important role with promoting sustainable transportation, such as through the sustainability and art mural project located in the Campus Bike Centre, the funding of bike repair and maintenance workshops, the availability of the UVic Carshare program (with Modo) to Family Student Housing, and Zipcar for all students, and with the loaning of over 500 bikes primarily to students through SPOKES.

The Sustainability Office recognizes that the university travel mode share is dependent upon regional transportation infrastructure and services, along with individual travel choices, but that new TDM initiatives will need to be considered, if progress is to be achieved towards the Action Plan goal.

Goal 3.7.2: Improve the sustainability of the campus fleet by reducing fuel consumption by 10% through staff training and gradual replacement of vehicles with the most fuel-efficient versions on the market.



Gradual replacement of fleet vehicles to more fuel-efficient vehicles is in progress. For instance, several new gators have been purchased to replace diesel gators, and a Nissan Leaf electric vehicle acquired for tool and trade transport. Preliminary investigation into further replacement of fleet vehicles, including receiving grants through the Clean Energy Vehicle Program for BC and Plug-In BC, and use of Life Cycle Costing Analysis for vehicles through the Fraser Basin Fleet Management program is in its early stages. BC Government grants (Plug-In BC) for the installation of additional electrical vehicle charging stations on campus are also presently being researched.

Developing a system to monitor the fuel use of university fleet vehicles and to assist in reducing overall fuel consumption levels through staff training has not yet been investigated, but is scheduled to begin in the 2017.

3.8 Waste

Mission: *To provide services and infrastructure that advance the university as a Zero Waste campus.*

Waste issues on campus are managed effectively through the centralized Waste Reduction Unit in the Facilities Management Department. The campus waste diversion (e.g. recycling) rate increased between 2010-2011 and 2013-2014 academic years. In March of 2016, and in conjunction with the Sustainability Office, the Waste Reduction Unit expanded recycling infrastructure across campus to help improve diversion rates. The Sustainability Office also observed a reduction in the waste produced at UVic per campus user, but it is unclear if the reduction observed will continue. Hazardous waste, managed through UVic Occupational Health, Safety and Environment, has meanwhile been optimized and that goal is considered complete.

Goal 3.8.1: Increase the waste diversion rate to 75% by 2019.

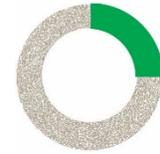
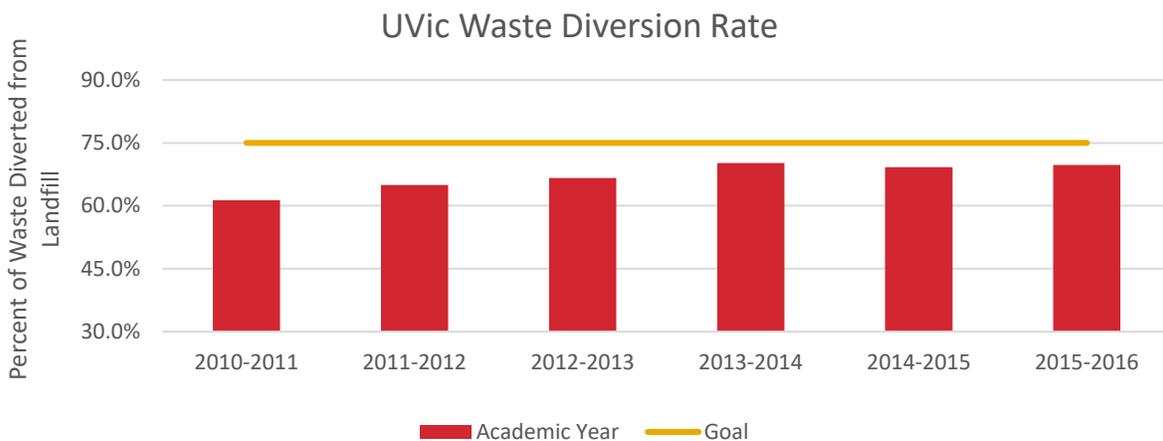


Figure 7 below shows advances in waste diversion after the UVic Waste Reduction Unit was set up in 2009. However, the diversion rate started to stabilize in 2014.

Figure 7: Waste Diversion Rate



New initiatives for waste management have been advanced across campus. In February 2016, over 300 UVic standard three bin stations were installed in office areas. The program shifted how landfill waste and recycling was collected, from waste and recyclables collected at the desk side to staff members becoming responsible for sorting their refuse at the newly installed three bin recycling kiosks, making recycling more accessible at UVic. Interestingly, between January and April the university observed a diversion rate of 69 percent, the highest rate recorded for a winter/spring term. However, given that full implementation was only achieved in March of 2016, the effect of the program on the waste diversion rate is not yet clear.

UVic is currently also examining how to expand the composting infrastructure on campus to capture new materials, including paper towels, which accounted for almost 15 percent of all material sent to the landfill in 2014.

Goal 3.8.2: Reduce the total amount of waste produced as measured in kilograms per campus user (students, staff and faculty) by 2019, relative to 2010 as the baseline year.

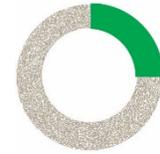
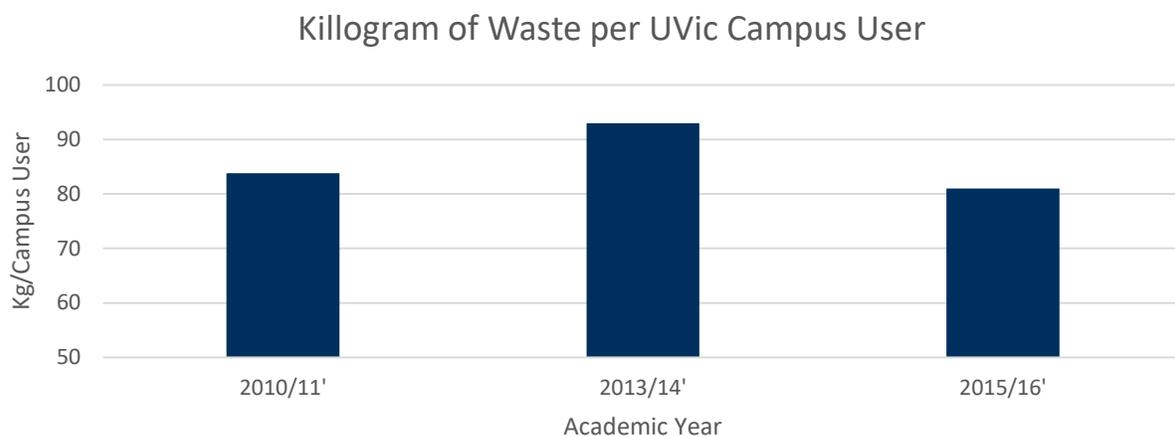


Figure 8 below shows advancements toward in the waste reduction goal at UVic. Between the baseline year and the 2013-2014 academic year, there was an increase in the waste produced per campus user. In fact, both overall waste production and waste generated per campus user peaked in the 2013-2014 academic year.

Figure 8: Waste per Campus User



Based on the data available, it is not clear if the decrease observed between 2010-2011 and 2015-2016 represent a consistent trend. However, influencing factors may include several waste reduction programs implemented since September 2013. These initiatives include:

1. The introduction of “Muggo,” an unusual but effective mascot who serves to promote reusable cup use on campus. Since Muggo’s introduction on campus in fall 2014, reusable cup use has increased from 22 percent in October 2014 to 37 percent in February 2016.
2. A pilot recycling expansion project, run between September and December of 2013, in which staff members were responsible for sorting their recyclable materials at central three bin recycling kiosks. The initiative focused the campus users’ attention on waste generation, and may have changed their consumption habits.
3. The Campus Freestore opened in September 2014, collects donated items to be reused free-of-charge. Since the Freestore opened, over 2,000 kg of materials have been diverted from waste and recycling streams.

Goal 3.8.3: Provide for responsible hazardous waste management on campus and reduce where possible the use of hazardous materials.



From 2013-2015, UVic Occupational Health, Safety and Environment (OHSE) implemented a multi-phase hazardous waste optimization plan to review hazardous waste disposal practices across campus and identify opportunities for reduction and/or minimization. As a result, certain biological waste can now undergo Safe Sink Disposal following treatment.

Lab users are encouraged to reduce where possible the use of hazardous materials and replace or substitute with less toxic materials where feasible. In 2013, a mercury thermometer exchange program resulted in over 325 mercury thermometers being taken out of the system, and disposed of in a responsible manner. On an on-going basis, labs are encouraged to use only non-mercury thermometers. A lab glassware recycling protocol is now in place, as is the encouragement to replace Ethidium Bromide (a known mutagen) with a safer alternative. An initiative to optimize the use of both the animate and inanimate biological waste disposal pails was also implemented. OHSE integrates the education of the above initiatives through a variety of safety training courses as well as annual lab audits for continuity.

3.9 Water

Mission: *To be an innovator in water use reduction, recovery, reuse and stewardship practices.*

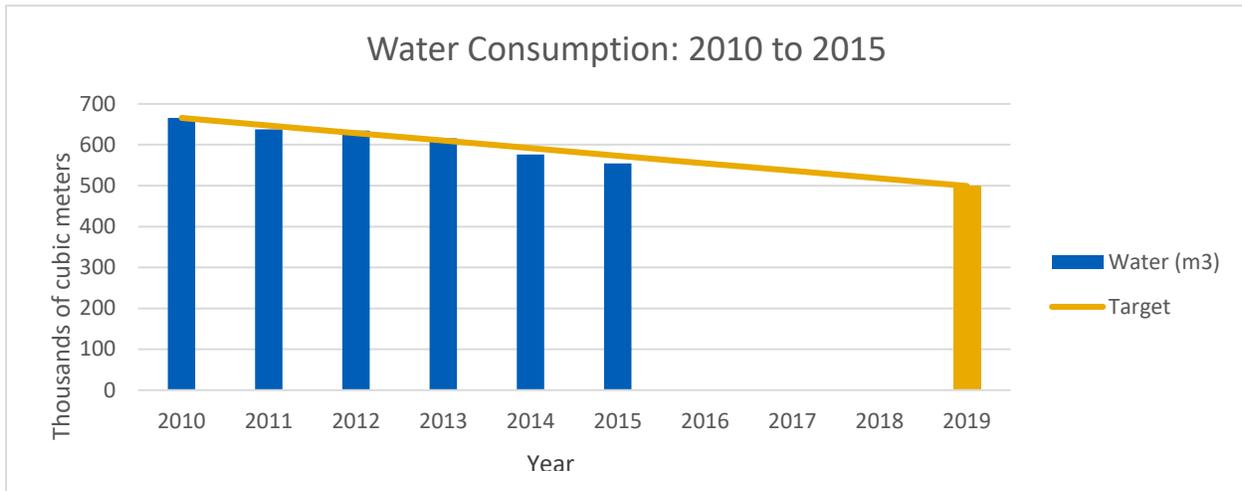
Water use at UVic is on the decline and the university is on target to meet its 2019 goal, despite an increase in the water used for irrigation. UVic is also committed to increasing access to public water refilling stations in campus buildings by 2019. The refilling stations expansion is planned for 2018.

Goal 3.9.1: Reduce campus water consumption by 25% by 2019, relative to 2010 as the baseline year.



Figure 9 below shows that water use at UVic has been on the decline since 2010. In fact, water consumption in the 2015 calendar year was almost 17 percent below the 2010 baseline year. As of 2015, UVic is slightly ahead of schedule to meet its 2019 target.

Figure 9: Water Consumption



There are two factors that influence the decrease in water usage. The first factor is that work in the UVic Outdoor Aquatics Unit, which formerly housed a large scale research project under the control of Pfizer Canada Inc., has decreased substantially. The decreased work has reduced water used in the facility by more than half. The project ended in December of 2013 and Pfizer had vacated the facility as of the end of January 2014, which accounts for the difference between 2013 and 2014.

The second factor is the work performed since 2012 in the replacement of the once through cooling units with air cooled systems, and the completion of other water saving retrofits across campus. These units used large amounts of water, upward of 20,000 cubic meters per year, to facilitate refrigeration. The replacement units use no water, and utilize electric fans instead. The replacement of additional once through cooling units is currently underway.

Water used for irrigation purposes, however, has been increasing. This increase means that the effects of water reduction efforts are not supported by changes in irrigation practices on campus. Since 2011, water consumed for irrigation has increased 33 percent because the campus area being watered has increased. For example, in 2015, UVic Athletics and Recreation assumed control of the Velox rugby field, thus adding to the UVic turf-grass portfolio.

Goal 3.8.2: Retrofit 25 water fountains in campus buildings for easy refilling of personal water bottles.



The installation of additional water refilling stations to the 75 retrofits that have been completed over the last five years in campus buildings, has not been initiated to date. A capital request for funding will

be submitted the fall of 2017 as part of the 2017-2018 routine capital submission. Implementation is planned for 2018.

Conclusion and Next Steps

The initiatives and actions undertaken since 2014 represent significant progress in achieving the goals outlined in the *Sustainability Action Plan for Campus Operations 2014 – 2019*.

Work has been initiated on all but one of the 32 goals in the Plan. Seven goals were considered achieved and three were flagged as challenges. For both of these categories, it is noted that the goals may need to be reframed or particular attention given to data deficiencies or gaps prior to the preparation of the final report on the Action Plan in 2019 .

Going forward, the Office of Campus Planning and Sustainability, in conjunction with discussion and support from the Sustainability Advisory Committee will continue to advance the sustainability goals outlined in the Action Plan. Projects on the near term horizon include:

1. Working with Purchasing Services on reporting systems on the source and environmental footprint of goods and services,
2. Creating a campus cycling master plan,
3. Developing a system to monitor the fuel use of university fleet vehicles,
4. Installing four additional electric vehicle charging stations,
5. Working with Food Services to create a local food inventory and benchmark,
6. Developing a formal Integrated Pest Management Plan,
7. Expanding composting infrastructure on campus,
8. Updating the 2004 stormwater management plan,
9. Reviewing the practices of post-secondary institutions that track demolition and construction waste, and
10. Completing a report on updated greenhouse gas emission reduction goals, along with long term electricity and natural gas consumption reduction targets for the campus in conjunction with the Facilities Management Department.

The Office of Campus Planning and Sustainability will also continue its reporting efforts with the 2016 Carbon Neutral Action Report and the renewal of our STARS submission in 2017. Furthermore, the August 2016 Provincial Climate Leadership Plan specifies a new requirement for Public Sector organizations to create 10-year emission reduction and climate adaptation plans.