

**Engagement in Greenhouse Gas Emission
Reduction:
Survey of Best Practices Programs in Engaging Students, Faculty and
Staff in Behaviour Change Strategies**
Mania Nematifar
University of British Columbia
PLAN 550
October 10, 2015

Disclaimer: "UBC SEEDS Program provides students with the opportunity to share the findings of their studies, as well as their opinions, conclusions and recommendations with the UBC community. The reader should bear in mind that this is a student project/report and is not an official document of UBC. Furthermore readers should bear in mind that these reports may not reflect the current status of activities at UBC. We urge you to contact the research persons mentioned in a report or a SEEDS team representative about the current status of the subject matter of a project/report".

Engagement in Greenhouse Gas Emission Reduction:

Survey of Best Practices Programs in Engaging Students, Faculty and Staff in Behaviour Change Strategies

Mania Nematifar



Table of Contents

INTRODUCTION: PROJECT BACKGROUND AND CONTEXT	3
EXECUTIVE SUMMERY	4
STUDENTS LIVING IN RESIDENT HALLS	5
FACULTY, STAFF AND RESEARCH COMMUNITY	10
OTHER INITIATIVES TO CONSIDER	15
CONCLUSION	15
WORKS CITED	16

Prepared for Campus + Community Planning
University of British Columbia



Introduction: Project Background and Context

The University of British Columbia strives to be a world leader in research innovation and technology in all aspects of its operation. The UBC Climate Action Plan (CAP) states that UBC students, staff and faculty strive to reduce their Greenhouse Gas (GHG) emissions by 33 percent in 2015, by 67 percent in 2020 and by one hundred percent in 2050, compared to UBC's 2007 GHG emissions. This year UBC will be developing an update to the CAP that will define new actions to ensure that UBC is on track to reduce its emission to 67 percent below the 2007 level. Heating and cooling of buildings and facilities are amongst the major sources of GHG emission, and in order to accomplish the CAP goals, students, staff and faculty must collaboratively lower the demand for heating and cooling in various buildings across the campus. Over the past several years UBC students and faculty members have made significant strides in reducing their per capita GHG emissions. According to the 2013/14 annual sustainability report 3,100 students have been engaged in sustainability projects, about 200 researchers have been engaged in projects such as "Shut the Sash" and 82 staff members have participated in the sustainability coordinator program. Building on these initiatives this report explores various ways in which other universities have engaged students, faculty members and staff in reducing their GHG emission (University of British Columbia).



Figure 1 UBC Campus *Note:* (2015). About the University of British Columbia [image]. Retrieved from <http://internationalscholars.ubc.ca/about-ubc/>

Executive Summary

This report seeks to identify best practices in engaging faculty and staff in GHG emission reduction. As most of the energy used on campus is used to heat and cool buildings, this report explores programs that can facilitate further engagement of staff, faculty members, researchers and students in green initiatives aimed at behaviour change. To explore this question, the top 20 universities that have decreased their emissions, based on the Princeton Review's Guide to 352 Green Colleges (The Princeton Review, 2015), featured case studies at ASHEE resource website (Campus Sustainability Case Studies), and best practices featured in Climate Action Planning (Us Environmental Protection Agency, 2010) report were surveyed. Through the survey it was found that most universities and campuses that have reduced their GHG emissions have student peer mentoring programs, structured green certification programs and various opportunities for staff and students to design and participate in peer mentoring projects. To analyze which of these programs suits UBC and what can be learned from them, a matrix was developed to analyze the programs offered at each university. Overall it was found that having a strong communication strategy and peer-mentoring programs



Figure 2: UBC Sustainability Ambassadors, *Note:* (2015). Sustainability Ambassadors[digital image]. Retrieved from: <https://sustain.ubc.ca/ambassadors>

influence the degree by which students are able to change their behaviour. The three sections below illustrate the programs that either build on what UBC has been doing or have specific features that suit UBC. The first section focuses on programs for students living in residences, while the second focuses on programs for faculty, staff and researchers and the third section focus on specific behaviour of saving hot water.

Students Living in Residence Halls:

There are over 10,000 students living in 11 residence halls at UBC. According to UBC's Sustainability website (Sustainability in Residence , 2015), students living in residence can engage by:

- Joining the sustainability committee for students living in Totem Park and Place Vanier;
- Participating in the Aim to Sustain competition;
- Visiting the Common Energy booth;
- Reviewing the sustainability tool kit.

To augment these programs, various university programs were explored. The following two pages describe these programs:

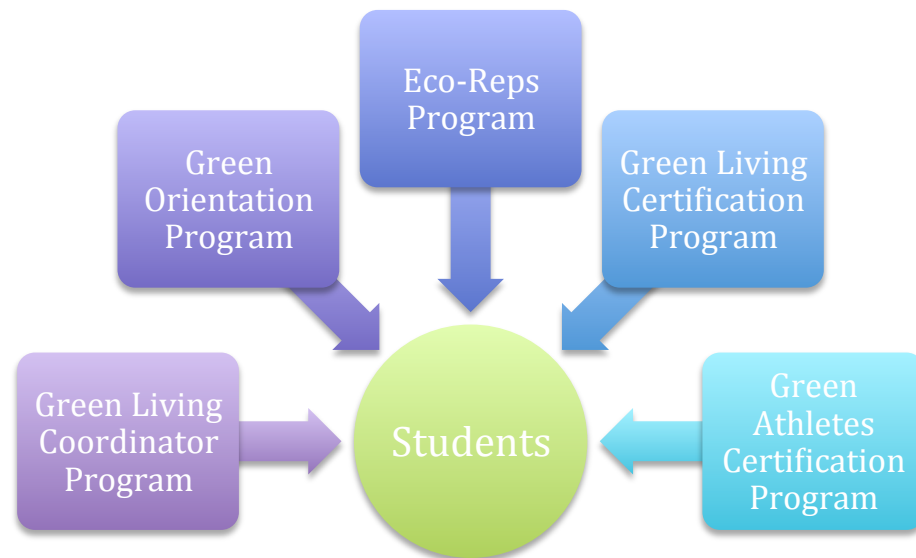


Figure 2: Student Programs

Green Living Coordinator (GLC) at Stanford University (Projects and Initiatives, 2014): In partnership with the Stanford School of Medicine, Stanford University offers two courses to students interested in becoming Green Living Program coordinators.

Students learn the basics of behavior change and design a sustainable behavior change intervention program that is focused on a specific behaviour that they would like to change in their residence. The university offers funding to students to implement the projects that they have designed during these courses. GLCs hold regular competitions to reduce the amount of water and energy used in dormitories.

Why this program is suitable for UBC: This program allows students to focus on specific pilot projects that can be then implemented at a campus wide level. The cost of this program is relatively low since students will be participating in a course. The student projects can be added to the SEEDS project library and be used by staff for future projects. Additionally, this project allows students to focus on specific problematic behaviours in their residence halls which may not be known to the Campus and Community Planning. UBC currently has a peer-mentoring program for students living in residences and this can further strengthen the existing program. Receiving training in behaviour change can enhance the quality of these projects.

Green Orientation at Harvard University (Hammer, 2014; Harvard Housing Orientation): Green orientation at Harvard University is offered through the Faculty of Arts and Sciences Green program in collaboration with the Office for Sustainability. This program is offered to 1,800 students living in dormitories. Students receive information about green initiatives on campus and how to get involved. In addition, many colleges at Harvard University hold one day training sessions on sustainability initiatives on campus for their students and staff. This allows students to learn about what programs exist on campus and how to get involved. In addition,

students learn what the university standards for room temperature in summer and winter are, and how to set their room temperatures appropriately.

Why this program is suitable for UBC: This program will allow incoming and international students to learn about various sustainability initiatives on campus and how to sustainability manage their energy consumption. This could be particularly helpful for incoming international students who are not aware of the university's commitment to sustainable living.

EcoReps at Cornell University (Student EcoReps): Since 2012 Cornell University has offered a peer mentoring program for students living in residences. The majority of mentors, EcoReps, participate in a 3-credit service learning program that focuses on sustainable living concepts, peer education methods, social marketing strategies and the psychology of behaviour change. The Eco-Reps, in collaboration with residence hall staff, plan various educational programs for their peers and host and organize various events in residence halls.

Why this program is suitable for UBC: This program is similar to UBC Sustainability Ambassadors program, but is focused on student residence halls. In addition, by linking the program to a 3-credit course, this offers a unique opportunity to the faculty and staff to pilot various projects in residence halls.

Green Living Certification Program at Pennsylvania University (Pennsylvania, 2015): The Green Living Certification program at the University of Pennsylvania rewards residents living in on-campus residential buildings for making day-to-day choices that reduce their environmental footprint. To enrol in the project, residents fill out an online survey that calculates their score based on

how environmentally friendly their daily habits and choices are. Their total score determines the level of certification they receive: Bronze, Silver, or Gold. All participants receive a sticker to hang outside their room. In addition, Silver- and Gold-certified residents receive a coupon from a local “green” restaurant. In the program’s first year, over 150 residents became certified.

Points are awarded to students when they adopt a more sustainable behaviour in the areas of:

- Waste minimizing and recycling
- Energy and Water
- Transportation
- Purchasing
- Volunteering

Why this program is suitable for UBC: This program offers a tangible way for students to get involved and reduce their emission overall. This is a good strategy to involve students who are not already involved and as an incentive to those who are involved.

According to post-implementation evaluations, 54% of participants who took the evaluation survey agreed that: “Applying for Green Living Certification resulted in changing [their] behaviour and habits” (Rowland & Goresko, 2014).

Green Athletic Certification Program at Yale university (Green Athletic Teams, 2015): Green Athletic Team Certification program provides an opportunity for teams to assess their environmental impact and take action accordingly. Each team can register for receiving certification. The team then receives a checklist and appoints one team member as their representative. The checklist focuses on how each team member is doing in the areas of waste and energy reduction, transportation, and food.

Why this program suitable is for UBC: This program can help UBC athletes reduce their hot water consumption through collaboration with athletes and various teams.

Program	Already exist at UBC	Behaviour	Impact 2020	Impact 2050	Influence	Economic Performance	Ease of Implementation	Research and Innovation	Other Benefits
Green Living Coordinator Program	Yes	Encourage students living in residences to use less heat/hot water	Med/low		Relatively easy to implement	Cost of promotion and operating budget of the reps	Requires partnership with Student Housing	Could be offered as part of a course	
Green Orientation Program	No	Help students learn about initiatives that are happening on campus and be sustainable	Med		Medium	Staff time, cost of promotion and organizing the program	Requires partnership with various departments	Offers a unique opportunity to showcase UBC	
Eco Reps Program	Yes	Focusing on peer mentoring in residence halls	Med		High	Cost of offering a course, cost of student project implementation	Requires partnership with UBC professors and UBC Student Housing		Involving the research community
Green Living Certification Program	No	Focused on various behaviours	Low			Relatively low cost of implementation requires a program coordinator and budget for gifts and promotion	Requires partnership with various organization		
Green Athletes Certification Program	No	Lowering athletes water consumption	Med			Staff time			

Faculty, Staff and Research Community:

UBC is home to over 80 laboratories and over 10,000 researchers and faculty and staff members. According to 2013/2014 Sustainability Report, UBC staff and faculty and students have undertaken 896 SEEDS projects, been involved in over 500 sustainability related courses, and have participated in Shut the Sash campaign. In addition, 80 staff participate in the Sustainability Coordinator Program in Offices to implement green strategies in offices. Below is a list of programs from other universities that strengthen the capacity of the staff and faculty members to contribute to greening UBC.



Figure 3 Programs targeted towards faculty, staff and researchers

Shut the Sash Program at Harvard University (Harvard University , 2015): The Harvard University sustainability office holds a monthly competition involving 350 researchers. Each month goals are established in terms of exhaust airflow average. The labs that have reduced their exhaust the most are rewarded on monthly and bi-annual bases. This has resulted in 30 per cent reduction

in fume hood exhaust level since 2010. Each lab has a designated volunteer that reminds their coworkers to shut the sash. In addition, bi-monthly emails are sent out to all lab members to remind them to shut the sash. The winning lab receives a pizza party at the end of the month. Posters and updates are sent to each lab and posted on the labs bulletin boards.

Why is this program suitable for UBC: UBC currently has an annual Shut the Sash campaign which is very successful. Having a monthly competition, having accurate monthly data on energy consumption in each lab, and having a volunteer dedicated to promoting Shut the Sash campaign in each lab will greatly enhance the existing program.

Green Lab Certification program at Cornell University (Sustainable Campus Cornell University, 2015): The Green Certification program aims at educating and assisting lab users to reduce their level of consumption. Each laboratory completes the Cornell Green Lab checklist to find out how they are doing. The labs receive their certification based on how many points they earn. The labs can see how much energy they use through checking the Building Energy Dashboard. The Building Dashboard provides real-time data in an effort to reduce the amount of energy used on campus. To assist with the implementation of the Green Lab and Green Office certification programs, the Building Dashboard converts energy consumption from electricity, steam and chilled water into metric tons of carbon dioxide. The Dashboard provides the live energy emission of 50 buildings across the campus (Building Dashboard, 2015).

Why this program is suitable for UBC: Having a certification program helps researchers and staff better understand and reduce their energy consumption. This program is particularly interesting because it helps researchers monitor and lower their energy

consumption through monitoring how much energy their building uses. Having a certification program provides incentive for lowering the labs consumptions.

Green Lab Certification program at Yale University (Green Laboratories Certification): The Green Lab Certification process at Yale university begins by a lab signing up to be certified. A volunteer representative from the lab fills out the initial survey that determines how the lab is doing and how many points it has received. The certification process has four levels. As labs adopt various sustainability practices they receive points and move to the next level.

Why this program is suitable for UBC: This program fosters a higher degree of collaboration with lab staff. The program has four steps which help labs strive to move forward.

Sustainability Coordinators Program at Princeton University (Staff Ambassadors, 2015): Each year members of staff volunteer to participate in a year long training to become sustainability ambassadors in their work environment. The ambassadors receive training and information about how to implement sustainability practices in their office.

Why this program is suitable for UBC: UBC already offers a similar program to staff. Having more rigorous training, similar to what they do at Princeton, can help strengthen the role of sustainability coordinators in offices.

Green Workplace Certification Program at Yale University (Green Workplace, 2015): The Green Workplace program at Yale University helps staff “green” their offices. Groups of five or more staff can sign up as an office. Each office receives a score based

upon an initial assessment of their sustainability practices. The staff also receive points for innovation. The certification has four levels and staff receive points as they go to the next level.

Why this program is suitable for UBC: This program provides a great opportunity to encourage staff to reduce their consumption and support each other in reducing their consumption.

Program	Programs already exist at UBC	Behaviour	Impact 2020	Impact 2050	Influence	Economic Performance	Ease of Implementation	Research and Innovation	Other Benefits
Shut the Sash Program	Yes	Closing sash in laboratories			high	Cost of administering a monthly competition	Relatively easy to implement		
Green Lab Certification Program	No	Helping labs green their operation			High	Cost of full time staff administering the program and cost of promotional materials		There is opportunities to collaborate with researchers on identifying how to help staff use less energy during work time	
Office Sustainability Coordinator Program	Yes	Reducing energy consumption in offices			High	The program already exist	Relatively easy to implement		
Green Workplace Certification Program	No	Reducing energy consumption in offices			High	Cost of fulltime staff administering the program and cost of promotional material			

Section 3: Other Initiatives

The following two initiatives specifically target hot water usage and can be beneficial in designing pilot projects in student residences:

Shorter Showers at Western Washington University (Communications, 2012): Western Washington University ran a three month pilot project using 70 waterproof digital timers. The timers are bright blue and shaped like a drop of water. Timers are stick to the side of the shower with a suction cup. The users can set a target time. As the timer gets close to the target time, the timer reminds users that their time is up. The university saw a ~22% drop in water use over the three-month period.

Washing clothes in cold water at Oberlin University (Mostow, Kahl, & Xu): A social marketing campaign involving posters and stickers was used to help students learn about washing their clothes in the cold water. Before the stickers, none of the laundry machines observed were running with cold water, even though 50% of student self-reported that they used cold water while washing their clothes. After the stickers were in place 45% of the machines observed were using cold water.

Section 4: Conclusion

Over all, the majority of the programs surveyed point out to the importance of including students and staff in designing and implementing these programs. Due to the nature of behaviour change programs, it was not possible to identify the exact amount of GHG emission accomplished from these programs. However, it seems that overall these strategies have been successful in reducing GHG emission. Further research into specific approaches taken by these programs is required to better understand the nature of the change achieved by each program.

Works Cited

- Building Dashboard*. (2015). Retrieved 09 05, 2015 from Cornell University: <http://buildingdashboard.net/cornell/#/cornell/Campus Sustainability Case Studies>. (n.d.). Retrieved 06 1, 2015 from Aashe: <http://www.aashe.org/resources/case-studies>
- Communications, C. M. (2012). *UBC Campus Sustainability Engagement and Social Marketing Strategy: Review of Related Research and Similar Programs*. University of British Columbia, Vancouver.
- Green Athletic Teams*. (2015). Retrieved 09 5, 2015 from Yale Sustainability: <http://sustainability.yale.edu/tools-resources/certifications-we-offer/green-athletic-teams>
- Green Laboratories Certification*. (n.d.). Retrieved 09 16, 2015 from Yale University : <http://ehs.yale.edu/policies-procedures/green-laboratories-certification>
- Green Workplace*. (2015). Retrieved 09 8, 2015 from Yale Sustainability: <http://sustainability.yale.edu/tools-resources/certifications-we-offer/green-workplaces>
- Hammer, K. (2014, 09 05). *Orientations Go Green*. Retrieved 08 29, 2015 from Harvard University Sustainability: <http://green.harvard.edu/news/orientations-go-green>
- Harvard Housing Orientation*. (n.d.). Retrieved 09 1, 2015 from Harvard University Sustainability: <http://www.green.harvard.edu/tools-resources/video/harvard-university-housing-orientation>
- Harvard University . (2015). *Harvard University Sustainability Green Labs* . Retrieved 09 5, 2015 from Harvard University Sustainability: <http://green.harvard.edu/programs/green-labs>
- Mostow, D., Kahl, S., & Xu, C. (n.d.). *Reducing Carbon Emissions Through Promoting Cold Water Washing on a College Campus*. Retrieved 09 1, 2015 from Oberlin University: http://new.oberlin.edu/office/environmental-sustainability/CBSM/Laundry_Pilot_2015+Final+Report.pdf
- Pennsylvania, U. o. (2015). *Green Living Certification Program*. Retrieved Sept 9, 2015 from Penn Green Campus Partnership: <http://www.upenn.edu/sustainability/get-involved/green-living-certification>
- Projects and Initiatives*. (2014, 09 29). Retrieved 09 1, 2015 from Green Living Council: <https://glc.stanford.edu/projects>
- Rowland, B., & Goresko, J. (2014, 11). *Green Living Certification* . Retrieved 09 7, 2015 from AASHE: <http://www.aashe.org/resources/case-studies/green-living-certification-rewarding-residents-environmentally-friendly-lives>
- Staff Ambassadors*. (2015). Retrieved 09 06, 2015 from Sustainability at Princeton: <https://sustain.princeton.edu/about/ambassadors>
- Student EcoReps*. (n.d.). Retrieved 09 05, 2015 from Sustainable Campus Cornell University: <http://www.sustainablecampus.cornell.edu/initiatives/student-ecoreps>
- Sustainability in Residence* . (2015). Retrieved 09 06, 2015 from UBC Sustainability: <https://sustain.ubc.ca/get-involved/students/events/sustainability-residence>
- Sustainable Campus Cornell University*. (2015). Retrieved 09 6, 2015 from <http://www.sustainablecampus.cornell.edu/initiatives/green-your-lab>
- The Princeton Review. (2015). *The Princeton's Guide to 352 Green Colleges*. Princeton. The Princeton Review.
- University of British Columbia. *Annual Sustainability Report 2013/2014*. UBC Sustainability, Vancouver.

United States Environmental Protection Agency. (2010, 10 5). *Climate Action Planning: A review of best Practices...* Retrieved 06 10, 2015 from President Climate Commitment: http://www.presidentsclimatecommitment.org/files/documents/best_practices_cap.pdf