ENVIR 480: Sustainability Studio
Final Reports
Policy Tools to Address Sustainability

PROGRAM ON THE ENVIRONMENT
UNIVERSITY OF WASHINGTON
College of the Environment
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- **Martine Renolds**, SEED
- **Jenna Truong**, SEED
- **Alice Ven**, UW Transportation Services
Project Groups

Evaluation of the University of Washington’s Green Certification Program: Current Program Challenges and Recommended Future Actions

Client Partner: Toren Elste, UW Sustainability
Project Team: Alexander Tyr Bernard, Habtamu Kabeto, Therese Kaitis, Amanda Bai

UWMC Culture Shift: Encouraging Sustainable Practices in a Medical Setting

Client Partner: Janet Bower, UW Medical Center
Project Team: Sophia Bidinger, Amber Pfeifer, Dana Brooks, Justin Hoang

UW Medical Center: Converting the Use of Blue Wrap

Client Partner: Janet Bower, UW Medical Center
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Analysis and Recommendations for Sustainable Transportation Options at the University of Washington

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Optimizing Commute Planning with UW Transportation Services

Client Partner: Alice Ven, UW Transportation Services
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Evaluating the Efficiency & Effectiveness of the Housing and Food Services Sustainability Committee

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OZZI Reusable Containers Program Evaluation

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Project Team: Kyler Jobe, Bacha Tovuudorj, Maddie Corbett, Stefan Mahler
Introduction

Sustainability Studio seeks to develop students as change agents in the pursuit of environmental sustainability at the University of Washington and in the greater Puget Sound. Institutions of higher education, including the University of Washington, play a critical role in fostering rapid and wide-reaching responses to our collective environmental challenges. The greatest leverage in achieving institutional change occurs when faculty, administration, and students collaborate. This course provides students the opportunity to immerse themselves into the real-world practice of institutional-scale sustainability through hands-on team projects and through partnerships with University of Washington faculty, administrative/facility staff, and a diverse array of community partners.

Sustainability Studio allows students to gain experience working with clients and to improve the state of sustainability in our community, all while learning about efficient and effective project design and management. The topic of Sustainability Studio changes each quarter. The Autumn 2019 quarter topic of Sustainability Studio was Policy Tools to Address Sustainability. With a particular focus on addressing sustainability issues using policy tools, the students learned strategies to execute both a policy analysis and program evaluation.

In order to prepare students to complete work on their client project, Sustainability Studio coursework includes discussion and exploration of the following topics: communication, teamwork dynamics, consulting, project design, project management, critical thinking, navigating ambiguity, conflict resolution, systems thinking and mapping, behavior change, and public speaking.

The following is a compilation of final reports produced by students in the Autumn 2019 quarter of Sustainable Studio.
Evaluation of the University of Washington Green Certification Program

Current Program Challenges and Recommended Future Actions

Alexander Tyr Bernard, Habtamu Kabeto, Therese Kaitis, Amanda Bai

Client: Toren Elste, University of Washington Office of Sustainability
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Introduction

The University of Washington’s Office of Sustainability commissioned our team to conduct a program evaluation of its Green Certification Program (GCP). A voluntary certification program evaluating sustainable practices within UW offices, labs and Registered Student Organizations (RSOs), the GCP endeavors to reduce UW’s environmental impact by inspiring sustainable efforts by students, faculty, and staff on all three campuses.¹

The GCP identifies three main goals: evaluation, promotion, and recognition. First, the office or lab identifies a champion. The champion will serve as representative, leading sustainable efforts in the office or lab. The champion fills out a detailed questionnaire from the GCP website. After being evaluated by the GCP facilitator, the lab or office will receive their score and certification level. Certification levels are Bronze, Silver and Gold. The champion also receives a quarterly GCP newsletter containing sustainability resources, recommendations, and events. Certified parties receive one pound of ethically sourced coffee. Green Awards are presented during Earthday to the most accomplished and innovative participants.

With the UW Campus Sustainability Plan scheduled for delivery Spring 2020, increasing sustainable campus practices is of paramount importance. Ultimately, the sustainable habits promoted by the GCP will be a prerequisite to UW meeting their goals to reduce carbon emissions to 36% below 2005 levels by 2035.²

When applying to maintain their Gold status with the Sustainability Tracking, Assessment & Rating System (STARS), a database evaluating and comparing collegiate and university sustainability, the UW cites the Green Certification Program as one of their sustainable initiatives. Thus, the GCP has an intrinsic impact on campus environmental performance as well as an instrumental role in the global conversation on higher education sustainability.

Considering the importance of sustainability programs at UW, our team explored the following questions:


1. Is the UW Green Certification Program effectively achieving its goal to increase sustainability on all three campuses?

2. How might the program be strengthened?

After meeting with our client and several team discussions, we realized the potential for evaluating every aspect of this program could exceed time limitations. We concluded that a reasonable scope meant focusing on key aspects such as program awareness, effectiveness, and participant experience. Our objective was to gather data relating to these aspects and deliver useful feedback and a recommendation report for our client, UW Sustainability.

**Methods**

We met with UW Sustainability Office Program Specialist Toren Elste, and GCP Coordinator Maddy Zschiesche. Our clients expressed their concerns and visions for the program, discussing limits such as budget and time constraints and a desire for increased campus engagement. From this meeting and follow-up conversations, our team conducted surveys, interviews, and researched similar campus programs.

To evaluate program awareness and participant experience, we developed and distributed two types of surveys. One was a random sample general survey conducted in person on campus, asking “Have you heard of the UW Green Certification Program?” Yes or No answers were tallied. We also designed a quick online survey, which was distributed, care of the UW Sustainability Office, to every champion on the GCP newsletter mailing list. This survey asked:

1. How did your office / lab / RSO hear about the GCP?
2. What motivated you to participate in the program?
3. Compared to the GCP liaison, how engaged with the GCP is the rest of the office/lab/RSO?
4. Did participation in this program change behaviors/practices in your office/lab/RSO?
5. From your experience, what are the strengths and weaknesses of the GCP?
6. With UW finalizing its Campus Sustainability Plan, what suggestions for the GCP do you have?

This survey was sent out to certified program participants with a twofold intention: to collect feedback on the program experience as well as gauge participation with GCP Newsletters. In an effort to indirectly determine participant engagement with the quarterly recommendations
the GCP provides, we specifically shared the evaluation survey with past participants through the GCP email address which sends out the Quarterly Green Newsletter.

In addition to our surveys, we interviewed several certified labs and offices for a more robust perspective of the GCP’s functioning. Communicating through either phone or email, we asked questions such as:

1. How did your office hear about this program?
2. Has this program influenced change in office procedures or behaviors? Why/How?
3. What actions are being taken to reach Gold? Are there barriers preventing this?
4. What do you think are strengths or weaknesses of the program?
5. Is there anything else about your experience you'd like to share?

Results

Survey and interview results included both praise and criticism of the program. Several respondents mentioned the program was motivational, and that sustainability recommendations were useful. Conversely, respondents mentioned the program faces several challenges including limited human resources, weak promotion, lack of consistent follow-up with participants, lack of institutional support, and lack of transparency and platform for sharing innovations.

Figure 1: this figure shows responses to the question “how did your lab/office/RSO first hear about the Green Certification Program?”.
Figure 2: this figure shows responses to the question “compared to the GCP liaison, how engaged with the GCP is the rest of the office/lab/RSO?”. 0 means the rest of the office/lab/RSO is not engaged with the program at all, and 5 means the rest of the office/lab/RSO is very engaged with the program.

Some interview respondents had positive opinions on the impact of the GCP like Hannah Nicholson who stated:

We have really enjoyed what this Program has brought to our department. My new "discuss sustainability in each meeting" really lightens up some of the meetings. And I love that I get to get plants for everyone's office! However, sincerely, I think this is a great initiative, and I would love to see it become a more significant discussion amongst schools, departments, and offices.

Other interview respondents offered critical feedback regarding efforts within the UW community. Participant Nan Holmes acknowledged that “the difficult part of the program is that it does not seem to recognize that UW is a huge community and we work together for many of our services like our custodial services”.

**Limited Human Resources**

Currently GCP operates under time and personnel constraints. The Green Certification Coordinator is responsible for multiple tasks including processing applications, awarding applicants, providing feedback, answering questions, creating newsletters, and updating the GCP website.
**Lack of Promotion**

Currently, the program is not very efficient in doing outreach and promotion. According to our random survey on campus, 8 out of 134 participants replied yes to the question “do you know about the UW’s Green Certification Program?” Responses from previous participants also indicated that it was difficult to stay involved after taking the survey. One survey participant passionately declared that “nobody knows about it nor is there any benefit other than a cheap, print-yourself certificate”.

**Lack of Consistent Follow-ups**

Our findings show disconnections between the UW Sustainability Office and GCP participants, especially after previous office/lab/RSO champions have left. Only 6 out of 95 champions responded to the survey which was sent through UW Sustainability, and several email contact addresses of the champions were invalid.

**Lack of Support**

Several respondents mention that some of the suggestions for improving sustainability are not institutionally supported or practical because of infrastructure and budget constraints. For instance, one respondent mentioned that it was suggested they have Facilities conduct an energy audit or install dimmers and motion detectors. However, they were rejected by Facilities because it would cost them lots of time and money and this was not at the top priority of their work orders. Unfortunately, the office itself did not have enough funding to achieve that effort.

Some survey participants responded:

“Without any funding to assist with making changes like old carpets to carpet tiles, the process is informative but with little implementation opportunity.”

“I would suggest the GCP has a budget for supporting some of the changes like the example above. Additionally, I presume but would like to know that GCP works closely with UW Facilities. For custodial work this could have an impact for composting and so forth.”

“Create strong linkages between the plan and certification actions and recommendations, where the latter are informed/bounded by resources, systems and infrastructure within the UW that the applying organizations do not have control over. Ie recommendations should be within the reasonable realm of possibility.”
Improving Innovation and Resource Sharing

Several participants indicated that they want to know how their efforts compare to others and also have an easy way to share innovations and resources. In particular, one survey participant responded, “I would develop more networking and sustainability ideas”.

Challenges at UW Bothell

The Green Certification Program has weakened at the Bothell campus, as evident by the comments below from UW Bothell Sustainability Coordinator, Alexa Russo:

Essentially we don’t use the program currently at all. I run the Sustainability Department at UW Bothell and don’t have the bandwidth to work on this. I did do a promotion of the program for Green Lab Certification last year, but at that time the website was down (unbeknownst to me), so that effort didn’t have merit. We have had one lab certify lately, and another in the past. I believe that is it on campus. We have not at all worked with Green Office Certification, and I don’t think that the clubs would be interested other than sustainability-related clubs.

I have considered trying again maybe more toward Earth Week, but I also don’t have things to give away as an incentive (and no budget to get anything). I would say some of the challenges would be a) incentive to participate b) getting people to participate in the program c) the program needing to be “Bothellized” d) time and energy to put toward this.

Thoughts From GCP Alumni

Julie Tolmie, the 2018-19 GCP coordinator and currently one of the three Ecoreps Members in charge of the Green Dawgs Certification Program recommended:

Right now, the programs ask labs and offices to make a number of small changes to their behavior to conserve energy, water, paper, etc., but the Green Certification Coordinator has no way of measuring how much of an impact these changes make. Without information on how much of a difference the certification programs make, it's hard to:

1. Evaluate the effectiveness of the certification programs
2. Improve the certification programs
3. Convince administrators and departments to support and advertise the certification programs
4. Convince labs and offices to sign up for the certification programs.

Some of the next steps we discussed were to have the Green Certification Coordinator and Student Program Assistant to ask the parts of the university that have the energy, water, gas, and other utility information we needed to share it with us. If information was collected on a campus level rather than building level, we considered asking the Facilities
department to begin monitoring and sharing information on a building-by-building level. The Student Program Assistant and I suggested that we should be the ones to ask for information because it's not considered appropriate for staff members to apply pressure to their higher-ups and we had the most time to take on these projects.

We value the above insight from Julie Tolmie. She was the 2018-19 GCP coordinator, and is a current EcoReps member. Thusly, we concur with her recommendation to collaborate with the UW Facilities department to acquire utility consumption data. Investing in metering to monitor utilities on a building-by-building level would allow for a quantifiable evaluation of the effectiveness of the certification program. Furthermore, the impact of the recommended behavior changes on office and lab’s energy and water consumption could be measured and utilized as research and promotion.

**Discussion & Recommendation**

Limitations of our project include a lack of quantified data and low survey sample size. However, we recognize the value in the personal responses we collected. If we were to conduct this evaluation again, we would have allowed a couple months for conducting surveys and interviews. Based on our findings, we have determined that while the GCP holds great potential, it currently struggles to improve sustainability at Tacoma and Bothell, and has room for improvement at the Seattle campus. Lack of promotion, consistent engagement with its participants, and institutional support have challenged the program’s potential to have a broader impact across three campuses. We now present recommendations addressing these challenges.

**Expand the Team**

Operating the GCP takes time, effort, and expertise. We recommend adding 1-3 people to work under the direction of the GCP Coordinator. Ideally, one person would design and implement marketing strategies including a social media campaign, campus posters, tabling events, and targeted outreach. Another person could serve as ambassador, facilitating meetings between offices and Recycling, and performing site walk-throughs. Research suggests that establishing a collaboration framework with all levels of management is essential for campus sustainability goals (Sharp). The GCP Coordinator could take this role if other duties could be delegated. This recommendation is influenced by respondents voicing frustration regarding support and cooperation due to university operations beyond their control.
With a sustainability requirement potentially becoming integrated into general UW curriculum, we foresee increasing opportunities for a diverse range of UW community to get involved. Recognizing budget constraints and UW’s talented body of candidates, we recommend a creative suite of recruitment options. Some options include:

- Capstone Project Students
- Service Learners
- Increased EcoReps Involvement
- Intern Position (with or without stipend)
- Independent Study or Research

**Independent Promotion & Outreach**

Finding that GCP promotion was obscured by other UW sustainability outreach efforts, we suggest GCP develop its own outreach and promotion system separate from UW Sustainability. To build this system, we suggest designated people to spearhead marketing, promotion, and outreach. Promotion and outreach take time and energy, so it’s necessary to have designated people who can fully devote. We also suggest that the GCP create an individual social media account such as Facebook, Instagram, and Twitter. Active promotion through social media will raise the awareness of GCP campus-wide. Pictures of certified labs/offices/RSOs, as well as tips and strategies for improving sustainability will be shared regularly on the social media account. Participants can comment, repost, and tag GCP on their accounts, as well as initiate activities such as competition and challenges among labs/offices/RSOs.

**Consistent Follow-up**

To remedy inconsistent follow-up, we suggest GCP strengthen their efforts to remain engaged with participants. Ideally, a staff or trained student ambassador from UW Sustainability would visit labs and offices to provide in-person guidance and answer questions. We also suggest GCP have designated personnel responsible for keeping track of participants. This person will serve as a liaison between UW Sustainability and participants. The liaison would be the primary contact for GCP participants, respond to their feedback and questions, maintain consistent contact by sending out quarterly newsletters and annual reminders for updating the questionnaire.

**Dashboard**

In response to finding a lack of networking possibilities within the GCP, we recommend an online dashboard that compiles the certification level, disaggregated self-assessment metrics,
and innovation strategies of GCP participants. Hosting an easily accessible database on their website in a manner akin to the STARS program will increase program transparency. Furthermore, it will motivate participants to compare performances as well as share resources and successful innovation strategies.

**Innovation and Celebration**

In order to provide a platform for sharing sustainability innovations and ideas, we suggest GCP to host an annual celebration event in which all participants across three campuses are invited. In addition to the Earth Day award recognition, this celebration will be an opportunity for people across campuses, departments, offices, and labs to meet and exchange sustainability ideas. Those who have made significant improvements will be awarded and promoted as leaders in improving sustainability and making changes on campus. Their innovations will be shared with the rest of the campus as well. During the event, panels and discussions will be hosted, so people will be able to share their innovations, as well as discuss challenges and problems they encountered. The event will be a great opportunity to promote the program and encourage people to participate.

**Next Steps**

This project has unveiled a host of potential research and development opportunities for the UW community. Moving towards sustainability means changing daily personal habits, but must be met halfway with larger institutional shifts if UW wishes to achieve its sustainability goals. We believe this is possible through further research, creative innovation, and resourceful solutions as suggested in this report. Moving forward, we recommend the following:

- Expand participant experience feedback research
- Investigate increased collaboration among university systems
  - Unify efforts across necessary UW departments
  - Gain access to building energy stats for data dashboard
  - Establish channels for infrastructure improvements (*carpet, lighting, thermostat*)
- Evaluate and implement personnel expansion option
- Work with UW Bothell and UW Tacoma to assess their particular program needs
● Design and launch new GCP marketing campaign
● Explore additional funding options
● Develop practices to maintain accuracy of GCP web page, resource list, and participant database

**Conclusion**

On Earth Day 2020, the UW will unveil its Sustainability Plan. This is an opportune time for the Green Certification Program to recalibrate and lead sustainable change at UW. Participants recognize the value of this program, and critical feedback offers an opportunity for improvement. For the GCP to reach its full potential, we recommend expanding the team in order to provide support in areas of marketing, participant engagement, and facilities and infrastructure. We consider improvements in these program areas as a prerequisite to significant expansion. The success of the Green Certification Program will be an essential element in meeting UW Climate Action Plan and Sustainability Plan goals. Our team hopes the ideas in this report are a catalyst for further research and implementation. We see the Green Certification Program of the future not as a voluntary program, but as compulsory.
References


UWMC Culture Shift
Encouraging Sustainable Practices in a Medical Setting

Client: Janet Bower, OR Nurse
Sophia Bidinger, Amber Pfeifer, Dana Brooks, Justin Hoang
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Introduction
In general, hospitals consume an immense amount of energy and produce massive amounts of waste. Some of this is for good reason; the primary objective of any healthcare organization is patient wellbeing. However, this complete focus on patient safety, health, and comfort can leave little time or mental space for parallel goals, such as sustainability. Supporting a healthy environment is within a hospital’s best interest. At the end of the day, they want everyone to be healthy, doing no harm along the way. Hospitals that have made concerted efforts to be greener have seen major benefits. For example, Memorial Hermann Health System in Texas saved $47 million over five years by implementing energy efficiencies (ASHE & HRET, 2014, p. 5). Kaiser Permanente is another leader in green medical care; they recently implemented a hospital wide sustainability policy and were able to save $4 million in the last year just by switching to more energy efficient computers (Gerwig, 2015).

To achieve major reduction in waste production and energy usage at the University of Washington Medical Center (UWMC), there first needs to be a recognition of the necessity and power of green practices among UWMC employees. The purpose of our collaboration was to support efforts to change the sustainability culture at the University of Washington Medical Center. We worked with Jan Bower, a nurse in the UW Medicine Department of Surgery; Jan is an advocate for sustainability at the medical center. She has established the OR Green Committee and is working to implement a broad sustainability policy modeled after Kaiser Permanente’s (Gerwig, 2015). For the scope of this project, we focused on education and awareness of UWMC employees, especially in the Plaza Cafe. Through education, we hope to support habits of proper waste sorting, waste reduction, and mindfulness around environmental impact of daily activities at the Medical center.

Methods
Our process of gathering data consisted of weekly meetings with our client, strengthening the impact of the OR Green Committee, developing deliverables that respond to our findings within the UW Medical Center, conducting surveys, and pushing for a sustainability education plan. At the UWMC, about 1,528 tons of garbage are produced annually (Cascadia Consulting Group, 2018, p. 126). Our group initiated the project with a system analysis poster that targeted culture change through sustainability. During this process we thought about what sustainability would be
within the context of the medical center and researched information on hospital waste management. We did this by identifying possible inputs and outputs of the system and brainstorming possible ways to reduce waste or energy.

We presented our systems poster to Jan in order to learn about other areas that can be prioritized for sustainability improvement. With the poster in mind, we began our first tour of the University of Washington Medical Center where we learned about her concerns of what contributed to contamination or mismanagement of waste within the facility. With this, we were able to narrow our scope and start with smaller areas within the medical center such as employee lounges, locker rooms and other thresholds that employees travel through to access other areas of the building. We especially wanted to focus on the Plaza Cafe because it is an area that is highly trafficked by UWMC employees ranging from facilities workers to surgeons. Jan shared her frustrations about how the Plaza Cafe is one of the places where contamination and confusion about proper waste sorting happens most frequently. We therefore concluded that the most influential contribution we could deliver would be through education efforts on the standards of proper waste sorting within staff and employees at the medical center.

After our tour of the medical center, Jan invited us to attend a green committee meeting that occurs once a month. She asked us to create a short PowerPoint presentation to introduce our project to the committee in efforts to establish rapport amongst the other members. We explained that the best way to shift the culture at the UWMC would be through education efforts specifically around proper waste sorting. We emphasized that quality patient care is the main priority and that our efforts would not disrupt that, but rather enhance it by creating a more sustainable culture. Afterwards, Jan provided us with contact information of potential staff that were interested in supporting the shift of the sustainability culture of the medical center.

First, we met with Liz Gignilliat, the UW Recycling manager who specializes in sustainability, recycling and general waste management on campus. We wanted to understand the scope and reality of our goals of this project by getting in contact with her as she could provide expert guidance. Further, we wanted the UW Recycling’s expertise to help guide our efforts in educational practices and to provide relevant and factual information. Liz provided us with current
educational signage, as well as the most updated report on campus sustainability. Further, we asked about their availability to facilitate waste audits and establish educational meetings at UWMC which she agreed to.

We then met with Charlotte Furman, a registered dietitian who works closely with the staff at the Plaza Cafe. Charlotte provided guidance in this meeting by explaining the current status quo of the kitchen staff’s day to day operations. She also mentioned that kitchen staff meetings occur once a month and that these meetings would be an opportunity to establish educational efforts amongst staff members as it would be a way to reach 60 - 70 staff members. During this meeting with Charlotte also identified constraints such as the lack of clear guidelines; there wasn’t product specific signage, no sustainability training for new hires and contaminated recycling due to lack of rinsing stations.

We then connected with Tim Nguyen, the manager of sustainability efforts at the UWMC and Zack Cross, the executive chef at UWMC. After explaining our goals and efforts for the project, both Tim and Zack expressed excitement and enthusiasm towards supporting us. Tim gave us a run-down of UW Medical Center’s sustainability status, awards and current efforts on waste management through his PowerPoint “Process in UWMC Sustainability.” Once again, we discovered new constraints towards waste management. Tim talked to us about the medical center’s trash bag color coating and how trash is getting mixed up because of the lack of attention to proper sorting. He hoped for another way he could reduce mis-sorting of trash and bring attention to his workers that they should not change the garbage bags until they have reached their full use and capacity.

Zack talked about how kitchen employees usually receive “on the spot training,” which means that if someone sees someone improperly sorting trash, they call each other out. However, this method only works if at least one party knows the proper assortment of trash and it further requires that person to say something. Zack was therefore very enthusiastic to the idea of introducing education efforts to the entire staff. He emphasized that it would be great if they could make a transition to increase rinsing of items before disposal. His greatest concern was that employees need clarity on packages and labeling of food crates and wrappers. He suggested that our signage should focus on
items primarily found in the kitchen. He also suggested creating table tents to help raise awareness amongst cafe patrons to sort their waste properly as well. Zack had ideas of reducing waste in the future by starting food donations and hope to transition back to traditional kitchenware such as reusable plates, cups and cutlery.

Thus, we took everything we learned from our meetings into consideration and created signage that could help raise awareness. We decided to avoid using any negative imagery to maintain a positive environment inside of the UW medical center. We also created educational table tents which have been printed and set up on the tables at the Plaza Cafe. Our signage hope to serve as a reminder that our health depends on the environment’s health as well. The table tents also gave quick tips on how to recycle and compost to reduce contamination or mis-sorting.

In addition to meeting with staff members, we conducted a survey in order to get a quantitative value regarding staff attitudes towards sustainability, and knowledge toward sustainable waste management. These surveys were dispersed by our client, Jan, and were available to staff members for a week. To incentivize engagement, we entered respondents into a raffle where they could win a gift card for coffee.

**Survey Results**
The survey was dispersed within the surgical pavilion and had a total of 53 respondents. In general, we found a recognition of the importance of sustainability. The key results of questions are illustrated in Figures 1 and 2, below.
Figure 1 depicts the results from the survey question: “how likely are you to attend an educational sustainable practices meeting.” Respondents self-reported likelihood to attend a sustainability meeting.

Figure 2 depicts the results from the survey question: “Do you often spend time correctly sorting trash?”

Figure 1 indicates that about 50% of respondents would be “likely” or “very likely” to attend a sustainability best practices meeting. However, OR Green Committee meetings have had low attendance with about 5-10 attendees. Perhaps the timing of the meeting could be scheduled to allow for increased staff member attendance. Similarly, Figure 2 shows that about 77% of respondents “always” or “usually” spend time sorting their trash. Additionally, 89% of people said...
they know proper personal protective equipment (PPE) disposal. However, while all hats, gloves, and booties belong in the trash, Jan said she often finds them in the compost or recycling bins. Glancing in any waste bin confirms this sorting problem, especially in dining areas and restrooms with poorly labeled compost bins. Despite reported confidence around trash sorting, a need for better education and labeling was evident.

**Recommendations and Next Steps**

To remedy the knowledge gap and sense of apathy amongst staff, we’ve created a series of four education-based recommendations. Although long-term cooperation between Plaza Cafe management, Facilities management, UW Recycling, and the OR Green Committee is required, these solutions have great potential to incite long-lasting change when enacted together.

A. **Educational meetings with staff members**

Due to current confusion on where to sort waste, we believe that conducting proper educational efforts will have the most impact on shifting the culture at the UWMC. Due to contamination and waste management policy conflict, there is a large misconception among staff in what will be accepted as recyclable material. To clarify what will currently be accepted as recycling by Waste Management Services from the hospital, we have set up an initial educational staff meeting between the Plaza Cafe staff members and a UW Recycling which will take place in January 2020. In an effort to keep the staff updated with any policy changes, to refresh current information, and to facilitate emphasis on sustainability, we recommend holding these meetings biannually. UWMC has partnered with UW Recycling in the past to educate staff members on waste sorting and it is apparent that the meeting had some impact, but after some time, the status quo of improper sorting was established again (Nguyen, 2019). By getting an outside recycling professional (Liz) to audit the current waste situation and see what items in the cafe may become waste, Liz’s team will be able to create a detailed, hospital specific, lesson plan. This will allow her team to teach staff members more effectively with items they use every day. Repeating such meetings on a biannual basis allows staff to stay up to date on any future policy changes and keeps sustainability in the forefront of their minds. By repeating the message, UWMC can address the apathy of staff and reinforce onboarding training/ information presented in meetings past. This combined with our other efforts will incite long lasting
and more effective culture change in UWMC by providing staff with a solid knowledge base.

**B. Educational Signage**

To clarify any misconceptions staff and visitors have about mis-sorted waste, clear hospital specific signage can be used to provide easy-to-read guidelines that educate users on the proper practices of waste disposal. Currently, there is signage that may be too overwhelming or not product specific to the items found in the UWMC and Plaza cafe. This is a source of confusion which translates into apathy as busy staff and patrons lose the motivation to navigate signage and sorting. In order to spread awareness, we recommend an **increase in signage** between thresholds around the hospital and areas where people spend time interacting or stay for a fraction of their day, such as in **elevators or lounges**. To keep the message positive and seed general eco-conscious behavior, this signage does not need to be specific to waste sorting. To better target visitors of the plaza cafe we have set up table tents for them (and staff) to read during meal times. These leisure spaces are often prime real estate for idle minds and will serve to passively educate and be a reminder to busy staff and patrons to keep sustainability practices in their day-to-day lives. Additionally, there should be **better labeling of compost bins in bathrooms** with PPE **specific instructions**. An example of such signage can be seen in Figure 3, which should be posted on paper towel dispensers, doors and directly above compost bins to be as streamlined and clear as possible. Our goal with signage is to educate staff and visitors on the importance of sustainability and the impacts it has on the environment and public health, without taking any extra time or effort out of their day.
Figure 3 depicts the compost signage that was created to put in bathrooms to remind patrons of proper waste sorting.

Figure 4 provides two examples of positive signage that can be posted around the UW Medical Center to remind patrons that sustainability is a priority.

C. Updated onboarding procedures

By updating the on-boarding information for new employees to include a section about sustainability, UWMC can get on top of informing employees about the goals and procedures surrounding sustainability. Currently, there is not a process that informs employees of the UWMC’s sustainability goals or procedures, and therefore, with the addition of information to the new employee on-boarding system, employees could make strides towards achieving sustainability from the start of their tenure at UWMC. This will
also help clarify possible confusion and it will help unify employees under one goal. Onboarding information should put an emphasis on correct waste sorting. This should include correct PPE disposal, strategies to reduce one’s overall waste output, and specific instructions on waste sorting and waste sorting practices. To keep onboarding information up-to-date and have the greatest impact, we also recommend this procedure include a quick walk-through or briefing on current problem areas and how new employees can help correct it/ how they can personally affect change.

D. OR Green Committee Promotion

According to our survey results, there is an interest amongst employees to attend sustainability meetings, however, there is still a lack of attendance at the current OR Green Committee meetings. We therefore have helped to promote the OR Green Committee by creating a mailing list template that can be sent to the Department of Surgery and any other interested staff members. We also made an informative PowerPoint presentation that was used at a large staff meeting. By continuing to spread awareness for the Green Committee, there can be increased participation and engagement. By spreading the word and creating a positive reputation, other departments may be inspired to start their own Green Committees as well. With this in mind, we recommend a continuation of OR Green Committee promotion and including low cost incentives at meetings. These incentives can come in a variety of forms and can be highly adaptable to suit the green committees’ preferences. These incentives should be advertised in most if not all promotional material such as signage and emails. This will give staff motivation to participate in future meetings and increase current member return. We also recommend expanding Green Committee efforts and promotion outside of the OR. Our survey revealed the majority of OR nurses had already heard of the Green Committee, so promotional efforts in the OR would be better suited to advertise time, location and incentives to increase meeting turnout. The Green Committee tackles current problem areas and strategies/techniques employees can utilize to address those areas. This is incredibly useful as it gives staff a very clear picture of how their actions can induce sustainable change, and provides a collaborative space where employees have agency to handle these problems. The Green Committee should expand its promotion to other departments to create this dialogue across the hospital. This
could be facilitated by formally inviting other department heads to Green Committee meetings, including other departments in the mailing list and posting Green Committee specific signage outside of the OR pavilion.

**Conclusion**

In effort to shift the culture at the UW Medical Center towards a more sustainable community, we have concluded that the most impactful efforts should be focused on education. In order to facilitate the enactment of educational efforts, we have focused on educating permanent UWMC employees. We have received enthusiastic support from nurses, managers, and UW Recycling representatives. There is already momentum around this effort, and we have identified four ways to support the movement. These include educational meetings, signage, on-boarding procedures, and promotion of the OR Green Committee. We have created table tents which have been distributed throughout the plaza cafe and have provided signage specific to bathrooms, and signs intended for elevators and lounges. We have supported the efforts to promote the OR Green Committee through our presentation and by creating a newsletter template which Jan can update and send out. We have also connected Zack Cross of the Plaza Cafe with Liz Gignilliat of UW Recycling to facilitate planning a joint educational staff meeting to take place in January 2020. Through these efforts, we hope to plant seeds of change that will support a long-term culture of a greener, healthier hospital.
References


UW Medical Center: 
Converting the Use of Blue Wrap

Report By: Pooja Kumar, Jesse Andreini, and Esther Suk Om

In Partnership with: Jan Bower, Operating Room Nurse - University of Washington Medical Center
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Introduction

Blue wrap (Figure: 1) blue plastic used to sterilize surgical tools in hospitals. Before being used during surgeries, surgical tools go through an extensive washing and sterilization process. Once washed, surgical tools are then placed on top of blue wrap, strategically wrapped into a package, and enter a sterilization chamber where hot steam is applied. The blue wrap packages are then taken into operating rooms and opened during surgery.

![Figure 1: A hospital staff member wraps a package for sterilization](image)

For the scope of this project, our client Jan, an operating room nurse at UW Medical Center (UWMC), and among many other staff, observed the massive amount of blue wrap that UWMC buys, uses, and throws into the landfill. UWMC currently has no policy surrounding their blue wrap waste and staff are determined to eliminate or convert the use of blue wrap through alternatives. For the scope of this project, the issue is so large within the entire hospital, therefore we will specifically target eliminating blue wrap within the Orthopedic surgery department. The Orthopedic surgery department uses the bulk amount of blue wrap, so we will be able to propose a pilot program to eliminate blue wrap, before tackling the entire hospital, which would need much more time than just a quarter. Just like many other hospitals, UWMC does not own the specific tools and implants needed for spinal surgeries. Instead, consignors who own such tools deliver them to UWMC, depending on how many surgeries are scheduled for that week, and UWMC staff sterilizes the tools using blue wrap before they are used in surgery.

We will convey the advantages of eliminating blue wrap to UWMC higher-ups through
presenting a cost analysis on how much is spent on blue wrap, which is about $92,000 annually, and how much of that money could go to alternatives or be reduced. One of those alternatives to using blue wrap are sterilization pans made specifically to handle the heat of the sterilization unit and containing all necessary locks, filters, and ventilation needed for the sterilization process (Figure 2). A single pan costs about $700, and with that $92,000 that is spent on blue wrap annually, 131 sterilization pans could be purchased. For the scope of our project, the Orthopedic surgery department only will need about 20 pans to eliminate blue wrap. What has been preventing UWMC from switching to pans is the shift from using the blue wrap process, which has been used for years, the upfront cost, and storage of all the pans.. However, ultimately, we will convey how the upfront cost is not a drawback since sterilization pans have a minimum lifespan of 10 year, and they are made of aluminum, which is easily recycled.

![Figure 2: A sterilization pan for surgical tools](image)

The following research objective was used to guide our project:

*Conduct an analysis of the environmental impact of blue wrap plastic usage and propose a cost analysis of switching to using sterilization pans.*

**Methods**

Our group first met with our client, Jan, at UWMC and got to meet more staff who gave us an overview of blue wrap usage, their hopes to switch to sterilization pans., and gave us a tour of
the sterilization room dedicated to Washington and sterilizing surgical tools. We then conducted scholarly research to find more specific information about blue wrap and looked into case studies of hospitals that have reduced their use of blue wrap through recycling and using sterilization pans. With this information was analyzed, we then created an overview of alternatives of using and reducing blue wrap, a cost analysis, and recommendations for UWMC to consider moving forward.

Results

About Blue Wrap

Blue wrap is a non-woven fabric made of polypropylene, one of the most common plastics in consumer products. The material is stable at high temperatures, which makes it suitable for sterilization, but it also has many other attractive qualities and is used in everything from long underwear to model airplanes. Being a thermoplastic, it is easily recycled as it can be melted and reformed many times. One use of recycled, shredded polypropylene is as a filler in concrete, where it reduces weight and increases strength. UWMC is currently unable to recycle blue wrap, however, as they have been told that overseas processors contracted by local recycling programs will not accept any material whatsoever from medical facilities.

While some areas of the United States do have blue wrap-specific recycling programs, it was determined that recycling presents a less sustainable long-term option for several reasons. First, recycling the wrap is not a policy that is feasible for UWMC to implement unilaterally; a recycler or intermediary of some kind would be necessary to coordinate such a program. Furthermore, recycling addresses only the end-of-life aspect of sustainability; while the material would no longer be sent to a landfill, significant energy, raw materials, and labor would continue to be used in the synthesis, forming, packaging, and shipping of the wrap. The recycling process would involve two more cycles of shipping, processing, forming, and packaging- once to be recycled, and again to be made into new products. The recycling process also has complicating factors- the wrap must be segregated from other waste, something that is problematic in a fast-paced hospital environment. Medical waste services that do have wrap recycling programs report finding everything from gloves and gowns to medical instruments and even a knee joint mixed in
with the wrap! If a load sent to a recycler is not perfectly sorted, it is rejected and sent to a landfill.

![Upcycled origami box made from blue wrap](image)

**Figure 3: Upcycled origami box made from blue wrap**

The durability and texture of the material make it ideal for reuse or “upcycling” and the used wrap is perfectly clean as the sterilized instruments are removed from the wrap before being used. The material can be sewn on a regular machine and also used in a wide variety of artistic endeavours. While this is a more sustainable than recycling, it is uncertain whether demand for the material would be high enough to divert a significant quantity from the waste stream. UWMC would also face some amount of liability exposure from such a program, although that could be limited by making it available only to institutions and non-profits rather than the public at large.

**Sterility**

Operating rooms account for a disproportionately large share of hospitals’ waste, estimated between 20-33%. At UWMC, the Orthopedic surgery department produces far more wrap waste than other surgery departments. The nature of Orthopedic cases is such that many case-specific tools may be required, as well as implants and other specialized devices. Everything that is used in a surgery must be sterilized, and a single case may result in as many as 20 wrapped and sterilized packages.
While the wrap is durable, the often sharp and occasionally unwieldy nature of the contents results in tears during or after processing from time to time. If a tear or hole is discovered, the entire surgery is halted while the contents of the package are sent to be rewrapped and resterilized. This is highly undesirable, as some surgical procedures are extremely time-sensitive. The operating room is also incredibly expensive to run. Wrap failures occur from 5-10 times a week, and even the low end of that range represents a weekly increase in hospital costs of $26,000. While the stakes of surgery are such that safety must take precedence over purely monetary concerns, the significant annual cost of wrap failure represents an opportunity to spend money to save money, if a replacement for the wrap is at least as sanitary. If these estimates are accurate, annual cost due to wasted operating room time exceeds $1 million.

**Waste**

While UWMC cannot provide with exact statistics on their waste stream, an estimate was based on the reports provided by a variety of hospital staff. The estimates focused on the Orthopedic surgery department, as it represented the most wasteful and also the best opportunity to implement a trial program. Surgeries in the Orthopedic surgery department typically use instruments and implant kits that are provided on consignment, meaning the equipment is not owned by the hospital. The required items are requested by the surgical team, and this happens on a case-specific basis. Some cases will require 20 or more wrapped packages, while sometimes only a few are required. The average number of packages was 10, which was combined with average number of surgeries, square feet of wrap per package, and the density of the wrap to obtain a weight estimate. On an annual basis, the Orthopedic surgery department uses an estimated 28,000 pounds of blue wrap! Currently this wrap is sent to a landfill.

**Cost**

The environmental impact of disposing of wrap is a complex issue, and the focus of this analysis was on implementing more sustainable products and processes rather than exploring the adverse impact of the current ones. The financial costs were assessed, in an effort to present the elimination of wrap as not only environmentally responsible but also fiscally responsible. The “win/win” nature of such a proposal is a key consideration in the feasibility of its implementation. UWMC spends $92,000 on wrap annually; the labor costs of wrap vs. reusable pans are estimated at $75,000, while the disposal costs were not available as the waste stream is not segregated. The cost of purchasing reusable sterilization pans was only estimated for the
Orthopedic surgery department ($14,000). It is important to note that the pans last a minimum of ten years, meaning the amortized cost would be far lower per year. The operating room costs due to failed wrap dwarf these numbers, and it is estimated that the cost of purchasing reusable pans for all departments would be recovered by labor and wrap purchase savings alone in 1-2 years. The annual savings from the elimination of wasted time due to failed wrap represent significant financial benefit to the hospital, while the increased safety is priceless. The estimated numbers certainly support a trial program limited to the Orthopedic surgery department, which would provide valuable data for analysis and feedback opportunities from medical center staff.

Discussion

The transition to reusable pans from disposable wrap represents a far more desirable sterilization practice on many fronts: the pans decrease labor costs, increase the reliability of the sterilization process, and represent a significant cost savings. Our project was focused on sustainable policy, and while that may sound like focus solely on the environmental impact of a policy, truly sustainable policy must take a holistic approach. The environmental impact of blue wrap is not the worst thing in the world- it is fairly inert, it is not polluting our air and water, and it does not litter our streets. It does represent a product that is manufactured in massive quantities, used only once, and then disposed of in a landfill where it may rest for thousands of years. In crafting sustainable policy, we must not only find ways to move away from single-use products, we must seek replacements that are both effective and less wasteful. Transitioning to reusable pans represents a rare chance to not only replace such a single-use product with an environmentally friendly alternative, but to do a better job (in this case, at sterilization) while also reducing costs. This transition would be feasible for UWMC even if it represented some increase in costs, both because of the other benefits and because UW (and the public-at-large) see non-monetary benefit in decreasing our adverse environmental impacts.

Institutions such as UWMC require sustainable policies that are scalable as they grow. Jan told us that over the last few decades the number of surgeries performed had grown very quickly, requiring them to expand the sterilization room itself to about 10 times its initial size. If this is considered in the context of the waste generated, the growth is even more significant. Blue wrap is currently used because that is what they used decades ago; it is policies such as these that
must be considered in a framework of sustainability. The end result: policy that is not only
dearer to the environment, but fiscally responsible, more efficient and able to be scaled up as
needed.

Successful scaling requires strict, but not absolute, adherence to the plan. Allowing
adjustments to be made is vital because there may be unforeseen factors that were not adequately
addressed in the initial proceedings. The main focus of our research was to determine the
potential for a vertical scale up but the potential for horizontal scaling should be recognized as
well. If successfully implemented, this trial or transition could serve as a framework for other
medical institutions to follow suit. UW Medical Center is ranked highly in the state, as well as
across the nation. It goes without saying that an achievement by this institution in the
environmental realm would be recognized and possibly replicated down the line. One of the
main concerns about scaling up would be the initial cost, but our research has demonstrated that
the cost of replacement is similar to the current cost of purchasing blue wraps if you count the
externalities regarding blue wrap. The pans from the trial do not need to be discarded, thereby
lowering the cost of a full-scale implementation.

From our discussions with other staff members, we believe this change to be compatible
with UW Medical Center as a whole. Current users of blue wrap as well as staff in the
sterilization rooms have expressed their support for moving towards a more environmentally
sustainable direction. Although this belief may not account for all individuals working at the
institution, explaining the relative advantages of the pan and why the change is necessary could
help minimize conflict. The technology of the pans is relatively simple which means that training
for current and future members would be easy to set up and implement.

Recommendations

1. We recommend UWMC implement a trial project, converting sterilization for Orthopedic
cases to reusable pans. The relevant process and practices may be updated, although
because some pans are already used, training and disruption would be minimal. A key
element in assessing the results of the trial is tracking the effect on sterilization room
labor and operating room delays, as it is predicted that both will be reduced. It is
estimated that 20 pans would be needed, and the total investment in the trial would not
exceed $15,000. We also recommend seeking out feedback from staff on the effects of
trial.

2. While outside the scope of this project, we see opportunity in the future to consider a
policy that encourages instrument consignors to provide their consignments in
conforming sterilization pans. This may streamline the sterilization process and would certainly reduce the required purchase and storage space for pans. This policy could take the form of conferred preference for those who participate or a monetary premium.

3. It is likely not feasible to completely eliminate the use of disposable wrap, at UWMC and other area hospitals. For this reason, we also recommend pursuing a recycling program locally, as well as an outlet for providing the material to “upcyclers” at no cost. This could require partnering with other wrap users to guarantee a minimum volume to a recycler, but the program may be able to function at no cost to the hospital. Low-barrier recycled uses for shredded polypropylene such as concrete additive may provide significant cost savings to the user, while having a lower environmental impact than traditional processing of recycled thermoplastics.

Next Steps

To implement the trial, coordination is required among several departments at UWMC; we suggest that the sustainability committee is well-positioned for this work, although the trial actually requires little more than changing the policy and purchasing the additional pans needed. Forming a way to track the potential time savings and impact on operating room delays is critical and should be implemented at the same time; the format of such tracking should be crafted in consultation with sterilization room staff. In doing so, the feasibility of the policy changes can be truly addressed. The sustainability committee should develop a stronger relationship with the individuals that oversee the management of the medical center and have the power to implement such a large-scale change in operations.

Conclusion

This project was surprising, as it revealed how some policies at large institutions are based much more on “that’s how it’s always been done” than sound policy. But at the same time, it demonstrated that people are not against change as much as one would think. It is likely that an institution like UWMC has other areas which could benefit from analysis that considers more sustainable options. This analysis must be both insightful and creative; it may not always result in “win-win” outcomes where costs are reduced and needless waste eliminated, but truly sustainable policies will help large institutions such as UWMC stay environmentally friendly, financially viable, and increasingly efficient as they grow.
References


Analysis and Recommendations for Sustainable Transportation Options at the University of Washington

Authors: Sophia Romanelli, Ethan Sedgemore, Karen Bosshart, Emelyn Melton

Client: Phil Miller, Transportation Analysis for UW Transportation Services
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Introduction

Background

Our project is focused on policy analysis aimed at lowering Single Occupancy Vehicle (SOV) rates, decreasing need of parking spaces, and increasing sustainable transportation usage within UW campus and its surrounding areas. Our policy recognizes that, while a majority of UW students live on or near campus and still contribute to the SOV rate, as many as a third of all students live off-campus in other parts of Seattle, where public transportation availability varies (see Figure 1). As illustrated in the map below, Seattle has several areas that may be classified as transit deserts, in which public transit options like buses are limited. The Campus Master Plan aims to lower UW SOV rates from 17% (where we currently stand) to 12% within the next 5 years (University of Washington, 2019). This reduction will facilitate the removal of 3,000 parking spots, which are slated to become more scarce with the expansion of UW programs (University of Washington, 2019). A 5% reduction in SOV rates will further reduce traffic congestion as well, lowering UW’s carbon footprint overall. Changing modes of transportation within the campus (point-to-point transportation) from gas-based vehicles to sustainable alternatives is another goal; switching from driving to bussing, cycling, e-scooters, and

Figure 1 The area directly around the University of Washington has a very high transit demand that significantly outpaces the supply (Norimine, 2017)
walking will again lower UW’s carbon footprint. All policies considered must value equity of access and ease of adoption by students, faculty, and impact on surrounding communities.

**Main Research Questions & Objectives**

Research Questions and Objectives:

- How can we integrate app-based transportation technology to serve the University of Washington’s daily transportation needs?
- What standards should we expect from the app-based mobility companies we work with?
- How can we further the goal of reducing SOV rates? The Campus Master Plan aims for UW’s SOV rates to be reduced from 17 to 12% (University of Washington, 2019).

**Methods**

To go about answering our research question, we initially searched through the literature and met with our client to talk about the focus of our project, as well as the constraints we were under. We focused on researching other examples of transportation technology (E-scooter findings report 2018), (Heeke, et al. 2014), as well as familiarizing ourselves with current and upcoming mobility technologies and companies (Akshay, et al. 2013; ITF, 2019), as our evaluation methodology would be focused on evaluating these. Another part of our research involved looking at other cities and schools, similar in population and public transportation infrastructure, to see what policies they have implemented towards similar transportation goals (E-scooter findings report 2018; Xpress Staff, 2019). In order to achieve our objectives, we first came up with a large list of policies, and narrowed them down to a handful of the most promising. Then, we discussed between ourselves and our client what the most important goals and criteria for evaluating would need to be. With all of that, we put together a policy matrix (Fig. 2). This was helpful in finalizing our policy recommendations. We utilized the funding matrix as our final tool in aiding us in our decision process for the policy recommendations we picked.

**Results**

- Integrating the U-Pass is a good way to minimize new implementation/infrastructure costs while also removing barriers of getting into bike share for first-timers.
• Difficulty with maintaining funding for the U-Pass as commuting decreases and profit from parking fees dec.

• Using contracts with companies will give UW the necessary control for future negotiations, which should be beneficial to campus and not just TNCs. Fees should be imposed for central and east campus usage, and fines imposed for noncompliance.

• Safety is an important and often overlooked aspect of upcoming transportation technologies. Careful attention must be paid to limiting speed of bike and scooter shares in especially pedestrian-heavy areas of campus, to prevent accidents and impaired campus infrastructure access.

Conclusions

Recommendation #1- Subsidize student and faculty use of scooters, bikes, and Uber/Lyft carpools

Our first recommendation is that the UW subsidize student and faculty use of app-based scooters, bikes, and carpools. This would be achieved by negotiating a contract with scooter, bike, and carpool companies which would allow students to a) log into their apps with their UW email, b) access student discounts, and c) pay with funds from their husky cards. The program would be opt-in, and a small fee would be implemented to cover the upkeep costs.

Economic benefits: Subsidizing scooter, bike and carpool would make these modes of transportation cheaper for everybody.

Environmental benefits: Electric bikes and scooters do not emit greenhouse gasses, and carpools use less gas than Single Occupancy Vehicles. Subsidizing bikes, scooters and carpools would incentivize their use.

Social benefits: Subsidizing scooter, bike, and carpool makes them more accessible to more people. Students and faculty are free to choose the best method for them while still promoting sustainable behaviors. As the campus master plan already includes updating scooter and bike infrastructure, it helps further prepare the campus for an influx of commuters passing through campus due to the construction of a new Light Rail station.
Recommendation #2: Establish pick-up and drop-off zones for ridehails; Implement fees

Our second recommendation is that UW create pick-up and drop-off zones for any ridehails (uber, lyft, etc.) to limit the area the vehicles can go, and to create easy-access zones by centralizing the areas. Limiting the locations ride-hails can drive around is important for two reasons. First, it helps avoid potential accidents from vehicles taking ‘shortcuts’ and driving in pedestrian or non-vehicle areas. Second, it helps control the road congestion that will occur when the large increase of ridehail vehicles come to campus. Additionally, there would be fees imposed that serve to incentivize increased sustainable behavior. These fees would also help fund the U-Pass.

Economic benefits: The money received from fees would go into U-Pass funds, and creating the zones would only have costs associated with finding the best place for the zones and having the small amount of necessary zone/fare enforcement.

Environmental benefits: Increased carpooling uses less gas than Single Occupancy Vehicles (SOV), and this policy would help continue the U-Pass program which itself is pro-environment.

Social benefits: Students are able to choose their own transportation, and they would be able to go to a designated area to get the ride, promoting safety and accessibility. This would also limit the amount of traffic in the surrounding area, which would be good for non-UW local entities.

Recommendation #3: Quotas for Bikes/scooters

This policy would keep the total amount of bikes and scooters set, and instead of putting direct punishments like fines on companies for underperforming or poor behavior, would simply be moving a portion of their quota to other companies. This would give companies the incentive to not be disruptive or unsafe, as well as to outperform the competition.

Economic benefits: Companies would compete for quotas with no additional costs to students. There would also be little financial cost with reprimanding.
Environmental benefits: Bikes and scooters are electric, and are eco-friendly ways of getting around/to campus. This benefit would potentially lower parking rates on campus and SOV rates.

Social benefits: Encourage companies to compete with each other by always striving to be safe and follow the University's requests. Companies who leave their bikes/scooters in unsafe locations would be awarded lower quotas.

Recommendation #4: Gradient parking fees so that SOVs that live nearby pay higher fees than those that live far away

Economic benefits: This would increase the Transportation department’s revenues even as parking spaces dwindle. The increase of revenue could help fund the scooter/bike subsidies without passing fees onto students in the form of a higher U-Pass. It distributes the increase of fee equitably, so those with easier access to campus would pay more for their commute.

Environmental benefits: This policy would lead to less people driving because parking costs would be higher which would increase carpool or bus or rail all of which are more sustainable options. This would also increase funding for the U-pass which is used for non-SOV commuting and would be more sustainable.

Social benefits: There may be some push back on this policy from the public.

Next Steps

The next steps of our project include collecting data on student transportation use; choosing the policy(ies) to implement; begin implementation of the selected policy(ies); and advertise the policy(ies) as well as existing alternative transportation methods/routes to UW. Additional steps include adapting mobility product/service apps to accept the U-Pass; secure spatial data from TNCs for UW; and establish speed limits for sidewalk usage and off-zone areas.

Collecting data on student transportation usage is important for successful implementation because several of our policies require current data on where students are
commuting from/to, where hotspots are, any certain areas to prioritize. Advertising the selected policy(ies) is important for successful student/faculty use of the policy, because there needs to be enough people using these policies in order for them to fully achieve their benefits. Additionally, it will be easy to incorporate advertising existing policies into this. Since the overarching goals of less parking, less SOV commuting, and more U-Pass funding apply regardless of which policy is selected, having existing policies used by more students will require little upfront cost as the policies are already implemented, and the existing policies are aimed at a more sustainable campus and better transportation choices, which would help reach the overarching goals.

**Takeaways**

Our policy recommendation is that we should create an opt-in subsidization of TNCs. Additional implementation includes the gradient parking fee, drop-off and pick-up zones, fines/fees, quota for bikes/scooters, and promote existing transportation alternatives, some of which include UW’s bike rental program, carpooling and rideshare, and other alternative transportation methods.

Our main deliverable for this project was to develop an evaluation methodology for incorporating new, technology-based mobility products. This methodology was primarily aimed at bikeshare, ride hail, and e-scooter programs. Additional products we kept in mind while designing the methodology were shared ride/shuttles, food/commodity delivery devices, and autonomous vehicles. The evaluation methodology is our policy matrix (Fig. 2); by using the goals and impact category, any future or potential policy can be properly evaluated, according to the existing constraints such as the Campus Master Plan, taking into account students and faculty, and many more.
### Policy Alternatives

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<th>Impact Category</th>
<th>1. Cause in subsidised travel to companies (km/yr)</th>
<th>2. Assist in paid-up and off streets</th>
<th>3. Cause for social scientists, etc., to be allocated between companies</th>
<th>4. Graduated Parking Fee</th>
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<td>Safety</td>
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<td>Poor-Teach! Would you be willing to walk or cycle more?</td>
<td>Poor-Teach! Would you be willing to walk or cycle more?</td>
<td>Poor-Teach! Would you be willing to walk or cycle more?</td>
</tr>
</tbody>
</table>

### Appendix

**Figure 2** The policy matrix, using the goals and impact categories to assess our 4 policies and the status quo
References


Optimizing Commute Planning with

TRANSPORTATION SERVICES
UNIVERSITY of WASHINGTON

Emma Maggioncalda
Dustin Woodbury
Jessica Zhu
Sara Tran
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Introduction

The primary objective of our project is to determine what strategy would be best for reducing the number of students and faculty that commute to campus via individual personal vehicles, and as such, reduce the number of vehicles parked on campus. Because of this, our goal is to optimize commute planning for people to get to UW every day. In doing so, we hope to make the usage of public transit more efficient and increase overall usage of UW’s U-PASS system. In order to accomplish this, the main options for UW Transportation Services are to develop an in-house application that would assist the UW community in commute planning or to seek out a partnership with an existing company which would improve upon the U-PASS and simplify the commuting process through the partner’s service. Sustainable lifestyles will be promoted through greater usage of U-PASS and public transportation in general as opposed to personal vehicles because this would reduce the UW community’s carbon footprint. Our goal is to make the recommendation to Transportation Services based on the costs and benefits of each option whether it would be best to invest in developing their own application or to partner with another company. We took into consideration a variety of potential partners, and the most promising of our options were Waze Carpool and Lyft. However, the development of an in-house app has its own advantages.

Methods

Initial steps we took to further investigate our research question included evaluating the status-quo, developing a criteria for apps, reaching out to companies for potential partnerships, and exploring policy approaches for lowering SOVs based on other universities.

For evaluating the status-quo we met up with our team lead, Alice Ven. She then forwarded us some material about UW Transportation’s current system which can best be
described as a commute planning questionnaire. We made observations about what it lacked to reflect with our outcome goals.

The importance of a criteria mediates as a tool to aid in weighing judgment. Criteria matrices explain data in a way that the observer can visually understand where options outweigh each other. Developing a criteria matrix based on status-quo, in-house app, and potential partnerships was a way for our group to organize our findings. When discussing which companies to reach out to, we first had to determine factors that made them standout. We determined a good transportation app must encourage multimodal practices, be highly accessible, and be user friendly. Along with a cost analysis to be included, we added monetary and environmental costs to the table. Furthermore, we discussed about weighing criteria options for some features being more valued than others and indication would be expressed as a larger box on the matrix.

Filling out the matrix was the more difficult part as we reached out to companies like GoogleMaps, Apple Maps, Mapquest, Transit, OneBusAway, Waze, Lyft, Lime, Strava, and ZipCar. We divided up the work and sent companies emails describing ourselves as the university’s transportation service representatives looking for potential partnerships. We asked questions about the levels of interest and how much it would cost to partner. Within weeks there were many emails to go through. A majority of the responses from representatives either said they would get back to us and never did or concluded that the apps were public and already free to use; an unwilling partnership. Other companies turned the emails into phone conferences where we discussed mutual goals.

In addition to our own findings it was important to look into outside sources to see what other universities have researched or used for transportation goals. This defines the “why” factor as we needed to fully understand the root of the problem to recommend a solution.

**Results**

Using our criteria matrix, we were able to evaluate each of the services. We decided to color code our matrix based on how effectively the given service fulfilled certain criteria. Green represents satisfactory, yellow represents decent, and red represents that which is not optimal.
We were unable to fill in the specifics of user experience and the necessity of an account for an in-house app because one has not yet been developed.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Status-quo</th>
<th>In-House App</th>
<th>Waze Carpool</th>
<th>Lyft</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Modes of Transportation</strong></td>
<td>Integrate all existing services</td>
<td>Could integrate all, including ferries</td>
<td>Cars only</td>
<td>Cars, transportation to public transportation hubs</td>
</tr>
<tr>
<td><strong>Need an account?</strong></td>
<td>No</td>
<td>Unknown</td>
<td>Gmail or facebook</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>User Experience</strong></td>
<td>Slow response time, decent case of use</td>
<td>Unknown</td>
<td>Must “match” first, relatively easy</td>
<td>Real time, high case of use</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>None</td>
<td>~$150-250k</td>
<td>None</td>
<td>~$350-400k</td>
</tr>
<tr>
<td><strong>Environmental Cost</strong></td>
<td>High</td>
<td>Lowest</td>
<td>Less individual drivers</td>
<td>Lower than status quo</td>
</tr>
</tbody>
</table>

The **status-quo** currently integrates all forms of transportation available in the area through extensive labor of the University of Washington Transportation Services employees, who must use several existing services to make personalized commute plans for clients. This causes the response time to be quite slow, two or three days, and in turn has a low quality user experience, though individuals using the service do not need to have an account, just their uw.edu email address. The status-quo also comes at a high environmental cost due to the large volume of single occupancy vehicles (SOVs). (A. Ven, Personal Communication, October 15, 2019)

The **Waze Carpool** app is a service we evaluated on the basis of a partnership. We spoke with Therese Pham, Partner Manager at Waze Carpool, and she informed us that it would come at no cost to the University of Washington, but rather Transportation Services would be asked to promote the app from within the school. They would offer a $2 promotion to all students through their uw.edu email at the start of the partnership. This service allows commuters on similar routes that drive to school to be “matched”, and in turn vetted through preferences of the riders and drivers to create cohesive carpools to campus, rather than each individual driving themselves. Riders reimburse drivers $0.58 for each mile through the app (T. Pham, Personal
Communication, October 22, 2019). Those who would like to use the service need a Gmail or Facebook account and to go through this process of “matching” with other drivers and riders, but it comes at a lower environmental cost that the status-quo because it decreases the current volume of single occupancy drivers (SOVs). However, this service is tailored for those who are only using cars as transportation, and therefore does not help increase utilization of the UPASS.

A Lyft partnership was one we highly considered because it integrates all forms of public transportation by providing credited lyft rides from individual’s houses to multi-modal public transportation hubs. We spoke with Lyft’s Senior Manager of University Partnerships, Logan McLeod, for more information. The user experience is of high quality because of the service’s high ease of use and efficient response time, and the service comes at a lower environmental cost than Waze Carpool and the status-quo because it promotes the use of public transportation, and in turn the UPASS. They have a “green mode”, in which they provide access to low impact vehicles. Their model projected to cost $350-400,000 would provide 5,000 students with 50 shared rides per month, each capped at $15. (L. McLeod, Personal Communication, November 21, 2019). We could not justify this cost for the low percentage of students it would serve.

The last option we evaluated and ultimately recommend is the development of an in-house app for the University of Washington Transportation Services. This has the potential of integrating all modes of transportation into one service, tailored to the University of Washington. For the ease of use of students less familiar with campus, transportation could be provided to specific provided landmarks near the perimeter of campus, such as the W sign on 17th Ave NE, particular libraries, or cafes. We would expect the app to cost approximately $150-250,000 based on the average cost of developing an app (Redka, 2018). An in-house app would be best suited to promoting the UPASS and use of public transportation by providing a cohesive, real-time, personalized commute plan for users. This would allow it to come at the lowest environmental cost of all services evaluated. Perhaps even it could include ferries as part of the commute planning, which few existing services do currently.
We believe the development of an in-house app fulfills the goals of this project of reducing single occupancy vehicles (SOVs), increasing UPASS utilization, and scaling down the large environmental impact of current transportation trends to University of Washington. It additionally provides exciting and promising possibilities for the future. Our outreach and criteria matrix methodology effectively assisted us in vetting the different options University of Washington Transportation Services has for commute planning services by providing clear and cohesive evaluations on them. The development of an in-house app could be done by a UW student as a capstone project, internship with Transportation Services, or something of the sort. This service would come at the lowest environmental cost and provide a great service to the UW public in terms of ease of use for commute planning for individuals. Furthermore, navigation apps are highly profitable, and once adopted by the UW could be sold elsewhere for a significant profit. More specifically, global navigation systems market is expected to reach $35 billion by 2021 (“The Transport,” 2019). Though the cost of the development of an in-house app is only estimated here, it has the potential to be gained back partially or perhaps even exceeded. Due to these environmental, social, and economic factors, we have found that the development of an in-house app would benefit the University of Washington Transportation Services and student body the most while fulfilling the goals outlined for this project.

Next Steps

The next recommended step as a follow up to this project would be to look into the development of an in-house app, although we found an estimated cost of production for this app to cost around $150-250k it would be very beneficial for the UW Transportation to decide all the functions and user experience they would like to implement into the app (Redka, 2018). This
step is very important since the main goal of this in-house app were to gain a better user experience for UW students and improve the overall quality of the multimodal transit structure for commuting students and faculty.

Conclusion

UW Transportation faces a new challenge to reduce their single occupant vehicles and increase the U-PASS usage percentage on campus. Since the current U-PASS transit structure only works for public transportation, we were tasked to find the best solution to optimize the ease of commute for students and faculties. Through our research we were able to source out private app sectors like Lyft and Waze carpool and public apps like Google Maps and Transit to find the best user experience, multimodal and collaborative app to integrate with the UW commute planning. Through further synthesis and analysis of all the available options we were able to draft a criteria matrix to find the best options and flexibility that would fill the needs for UW Transportation’s requirement. Upon the metrics on the matrix it was concluded that the best option would be to develop a more personalized in-house app that would be able to create a better user experience with real time multimodal transit options while also optimizing the U-PASS system. In order to proceed with this option our next step recommendation would be to look into what type of user experience and functions to implement into the app to make it a more personalized and better transportation app for UW students and faculties to use. Our project goal was to find the best solution to optimize the U-Pass system and increase pass usage, by following our recommendation we hope that this new app development would be able to improve the current transportation methods to ease commute planning for students and faculties and hopefully decrease the percentage of SOV drivers.
Works Cited


Evaluating the Efficiency & Effectiveness of the Housing and Food Services Sustainability Committee

Team Members:
Yujian Sun | Lingchao Ye | Emily Busse | Pranav Bhardwaj

Client Partner:
Clive Pursehouse, Assistant Director For Residential Life, and Sustainability Committee Chair

HOUSING & FOOD SERVICES
UNIVERSITY of WASHINGTON
Division of Student Life
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Background & Introduction

Housing and Food Services is an independent branch of the University of Washington, which aims to improve student life by building a sustainable living environment on campus, and providing quality dining options. HFS has 850 employees and is currently responsible for housing and feeding over 10,000 students. HFS is self-sustaining, meaning their entire budget comes from the cost of room and board, paid for by the students. Unlike other branches of the University, they do not receive any state funding and most of their budget, about 85%, goes towards employee salaries (UW HFS, 2019). HFS has a large footprint and sphere of influence and therefore has lots of opportunities to impact sustainability efforts on campus.

The HFS Sustainability Committee was created to provide a space to address topics related to sustainability across all of its departments. The committee is comprised of representatives from various departments within HFS, which currently include Residential Life, Facilities (2), Communications & Marketing, and Custodial Services, as well as two student representatives from SEED (Students Expressing Environmental Dedication). SEED is an environmentally focused student association open to all campus residents and housed within HFS. SEED’s agenda is set every year based on student interests, prioritizing the issues that current students care most about. There is currently not a dining representative on the committee, due to high turnover in that department, but there has been one in the past.

The Committee created a mission and values statement to guide the committee. The mission is divided into four main areas of focus, reflecting the breadth of HFS’s purview: Housing & Facilities, Dining, Student Engagement, and Financial Stewardship. Among the four main areas of focus, Housing & Facilities is focused mainly on building new buildings with high environmental standards and has worked with residents to collect data in order to further improve overall performance. Currently, all of their new buildings are LEED certified and they have been responsible for exciting innovations such as rainwater recycling for laundry use in one of the dorms. Another important areas of focus is on Food and Dining. HFS has been seeking opportunities to incorporate sustainable changes into their dining services, such as making sourcing decisions that increase percentage of “real food” without increasing costs, favoring vendors with sustainable practices, and reducing the amount of waste going to regional landfills.
They are also actively involved with student led sustainability projects, such as projects generated by the Program on the Environment’s Sustainability Studio (which sponsored this project), projects generated by individual students, as well as those created through the Campus Sustainability Fund and SEED.

Historically, HFS has played a significant leadership role in driving sustainability projects at UW. It is one of the main reasons UW ranks highly among other universities on sustainability metrics such as the AASHE STARS (Sustainability Tracking, Assessment and Ranking System) rating. However, their work has stagnated somewhat and they believe they could be doing more to make a positive impact on campus sustainability and the environment. They charged our team with evaluating their committee to see how they can improve their efforts and make even more of an impact. Our goals were to evaluate the efficiency and efficacy of the committee in achieving the goals they have set forth in their mission.

**Methods**

Our methods can be divided into three separate phases: data collection, research and synthesis, and evaluation. Our primary methods for data collection were surveys, interviews, and the review of committee materials and documents. The first step in evaluating the efficiency and effectiveness of the HFS Sustainability Committee was to meet with our client and Committee Chair, Clive Pursehouse. From this meeting, we received background on the history of the committee, a rundown of current and past projects, and a brief overview of how the committee currently functions. We were given a broad mandate from our client for what the shape and scope of our final recommendations to the committee could look like.

We then sent a team representative to attend a committee meeting to observe the committee in action, introduce the project, and solicit comments. We collected as many of the written materials relating to the committee as we could get our hands on - past meeting minutes, the committee charge, mission and values statements, and information on past projects. We then developed several survey questions.
Survey of Committee Members

We developed a survey to better understand the function of the committee and the views of the current members. We asked them the following questions via an online survey:

- How effective do you think this committee is at achieving its mission?
- How efficient do you think this committee is at achieving and implementing project goals?
- Is there anyone not on this committee that you feel ought to be represented? Is there a certain expertise/discipline do you think is lacking at the moment?
- How many hours a week do you think that you spend on the HFS Sustainability Committee? (including meetings and time spent on related projects)
- Do you feel like being a member of this committee is a good use of your time?
- What do you see as the current primary role of this committee?
- What would you like to see as the primary role of this committee?

Interviews with Committee Members

To further understand and analyze the motivations and opinions of various committee members, we conducted interviews with select committee members including: Clive Pursehouse (Client and Residential Life representative), J.R. Fulton (Capital Projects and Sustainability) and Jenna Truong (SEED Director). To gain a better understanding of how the HFS Sustainability Committee relates to campus wide sustainability efforts, or how it might benefit from doing so, we also interviewed Claudia Frere-Anderson, the Director of UW Sustainability.

Research

Our final step was to learn more about how Sustainability Committees function effectively in other organizations. We researched the operations of other Sustainability Committees or departments in both corporate and non-profit settings, as well as within the University of Washington. Our objective was to gain insight into how other sustainability committees are formed and funded, as well as how they operate and set their agendas. The following is a list of the organizations we researched:

- Microsoft, PCC Community Markets, Starbucks, Tesla, Thompson Rivers University (B.C.), Seattle University, and Seattle Central College.
In addition to the organizations outlined above, we also read scholarly papers and articles focusing on how to effectively implement sustainability programs.

We utilized the information from surveys, interviews, and research to make initial recommendations for the HFS Sustainability Committee using the Policy Analysis matrix, and then further developed our final recommendations.

**Results**
Survey results gave our group an initial understanding of member’s perception of the committee. We were able to gather information from all seven committee members, which allowed us to understand individual and committee-wide concerns. The first two questions were primarily focused on the committee’s effectiveness and efficiency, to which we received a varied degree of confidence. Although 100% of committee members completed the survey, we recognize that a sample size of seven (7) can be limiting in evaluating the committee.

Two multiple choice questions were part of this survey, which asked the committee members 1) what they thought the primary role of the committee is, and 2) what they would like the primary role of the committee to be. Both questions were given the same three options. As seen in figures 3 and 4, there is a difference in what the committee currently is, and what the committee would like to be. Figure 3 shows that the seven committee members were not unified on what the committee currently is. All three options were voted on, with the most voted option being “a space to foster student leadership and support student sustainability projects” (Figure 3). Figure 4 shows that the committee was significantly more unified in answering that they would like to see the committee function primarily as “a space for improving sustainability and innovating across departments.” This disparity was concerning to our group, as it could be a barrier for the committee in both identifying and achieving its long-term goals.

![Figure 3: Pie chart showing committee member’s responses on their current perception of the committee](image-url)
6. What do you see as the current primary role of this committee?

7 responses

![Pie chart showing committee member's responses on what they would like to see out of the committee.]

7. What would you like to see as the primary role of this committee?

7 responses

![Pie chart showing committee member's responses on what they would like to see out of the committee.]

The interviews we conducted with several committee members helped to further understand specific concerns and identify common themes among committee members, which allowed us to better evaluate the committee’s performance. There were three common themes that our group identified: representation, time-usage, and a lack of a sustainability vision. The following table summarizes these themes, utilizing quotes from our survey responses and interviews. It also
highlights the significance of these themes in regards to the committee’s performance. Providing solutions to these themes became an important focus for our group’s recommendations to the committee.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Quotes from Committee Members</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Representation</td>
<td>“I would like more variety”</td>
<td>Our group found it concerning that there is no current dining representative considering that dining is a major unit within the department.</td>
</tr>
<tr>
<td></td>
<td>“... almost all facilities and residential life”</td>
<td>Representation from a variety of units within the department can provide the committee with an alternative perspective to sustainability to achieve the committee’s long-term goals.</td>
</tr>
<tr>
<td></td>
<td>“There is no food service representative”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“... current group size is efficient”</td>
<td></td>
</tr>
<tr>
<td>Time-usage</td>
<td>“The space to troubleshoot issues is valuable”</td>
<td>As the committee meets bi-weekly for an hour, efficiently using the limited time is a key goal for the committee. Our interviews indicated that the time could be better used within meeting times, and also highlighted that a lack of structure towards meetings contributes to inefficient time usage.</td>
</tr>
<tr>
<td></td>
<td>“... a disproportionate amount of time is spent on these issues”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“... lack of consistency in defining goals or practices and then actually following through”</td>
<td></td>
</tr>
</tbody>
</table>
A review of four archived meeting minutes indicated that the committee has a few structural shortcomings that act as barriers to the committee’s effectiveness. One of these was poor attendance at the bi-weekly meetings. Of the four meetings, only one meeting had full-attendance. This can act as a barrier to the committee achieving their goals since not every unit is being represented within each of the bi-weekly meetings, and makes communication and collaboration more challenging. Consistent attendance can be a difficult aspect of the committee to enforce, especially with the other important responsibilities that committee members have in regards to their positions. However, this still acts as an obstacle for the committee in terms of efficiently using their limited time.

The minutes also indicated that there was a lack of a set agenda for the meetings, which can result in inefficient time-usage. As mentioned, a disproportionate amount of time is spent on troubleshooting sustainability issues (Table 1). Inefficient meeting use can lead to a lack of direction in pursuing and achieving both short-term and long-term goals. The minutes also reveal a heavy focus on SEED related content, and without an agenda for the committee, seem to rely on the agenda generated by SEED. Although contributing and supporting this student group’s initiatives is a key aspect of this committee, our group’s analysis indicated that SEED was the only focus for some meetings. This limits the time that can be spent on discussing sustainability initiatives and projects that pertain to a variety of units within HFS. These aspects of the current meeting structure can result in committee inefficiency and impede them in achieving their overarching goals. Structural and administrative changes to the committee are required in order to solve these issues.
Our group researched corporate sustainability models and the sustainability committee structures of various academic institutions. Our group focused on researching universities in the Pacific Northwest that were excelling in the field of sustainability. Examples of these institutions included Thompson Rivers University (B.C.), Seattle University, AND Seattle Central College. We also researched corporations such as PCC, Microsoft, Apple, and Amazon to consider different committee structures. These committees had various group sizes, ranging from five members, up to 20 members. We found that group size was not a contributing factor in a committee’s efficiency. All of the university committees that we analyzed had some form of student representation and a diversity of disciplines. These are important aspects of committee members to provide an alternative perspective during committee meetings, and represent a variety of different departments for the HFS Sustainability committee. Our research indicated the importance of leadership and structure in order to achieve long-term performance (Epstein & Buhavoc 2010; Weber et al. 2009).

**Recommendations & Conclusions**

Our results outlined a variety of aspects which led the HFS Sustainability Committee to be inefficient and ineffective in reaching their intended goals. We believe that adequate research was completed in order to answer our research question, although we may have been limited in our sample size for survey responses and interviews. This section will provide specific recommendations to be implemented by the committee to improve and build upon the current sustainability efforts. We have split up our recommendations into two main categories: 1) foundational and structural changes which will improve committee efficiency, and 2) goals and big picture changes to increase the effectiveness of the committee. These recommendations should help the committee improve their sustainability efforts with HFS, for the UW community, and beyond.
Figure 5: Diagram of Categories of Recommendations for how to improve the committee

**Foundational & Structural Changes**

These recommendations concern the structure of the committee and the format of the meetings. Having a set structure and agenda set for each meeting will make sure that the limited time (one hour every two weeks) is used as efficiently as possible. Our recommendation is that the meeting be split up into three segments which reflect the desired purpose of the committee. The first section should be approximately 10-15 minutes for departmental updates and support with troubleshooting issues that arise periodically regarding sustainability. The second portion, approximately 10-15 minutes, should focus on student engagement, including updates on student initiatives (e.g. SEED’s to-go container project) or pitches for future projects. The last section, and the majority of the time allotted, approximately 30-40 minutes, should be focused on working on furthering the Committee’s own agenda and making progress on sustainability projects that support the HFS Sustainability Committee Mission. This could also be a time to discuss campus wide initiatives and collaboration opportunities. Specific action items should be assigned at the end of each meeting to keep projects moving forward.

Having a set structure will also support our other foundational recommendations, to have a co-chair or facilitator. With busy schedules, attendance can be inconsistent. A co-chair or on-going
facilitator would benefit the group so that meetings, regardless of attendance, can be fruitful. The co-chairs or chair and facilitator would be responsible for setting the agenda for the bi-weekly meeting. To ensure consistent attendance, we also recommend that the HFS Sustainability Committee charter should require that each committee member have a back-up representative or proxy from their unit. Having a proxy or back-up representative in each department would be beneficial because it would increase the awareness of the sustainability goals of HFS, and ensure that the work of the committee progresses does not stagnate. The Committee should also actively seek a replacement for a dining representative. Dining is a major component of HFS and a huge area of potential area for innovation around sustainability. It is therefore crucial that a dining representative be included on the committee.

Big Picture Recommendations
There is a desire within the committee to be having a greater impact. This will require a coordinated effort among the HFS departments to prioritize sustainability projects, and continue to push employees and residents to see the value in these initiatives. Changing the culture will be an important aspect, but there should be a broad vision for all departments to get behind. This vision needs to be endorsed by the leadership of HFS and would be best served by coordinating with campus wide sustainability efforts.

We recommend that the committee revisit their mission and values and create an innovative and aggressive agenda that will ensure that HFS and UW remain leaders in sustainability. By generating a mission driven agenda and specific goals or targets related to sustainability, each department can decide how to best implement innovative sustainability practices. This will increase the awareness and understanding of sustainability within the operations of HFS and influence sustainability throughout the UW campus.

In most of the organizations we researched, there was some version of a Sustainability Coordinator position, that was in charge of collaborating with various departments, identifying areas of improvement, and pushing sustainability projects forward. Our final recommendation is for HFS to explore the possibility of creating a Sustainability Coordinator role to aid in implementing these changes. We envision this as either a half time position that is focused on
coordinating and driving sustainability efforts, or this time could be split among the committee members, providing them with more time to focus on these important issues.

**Next Steps**
The HFS Sustainability Committee Chair should take our recommendations to the committee for further discussion and decide which recommendations for improving the efficiency and effectiveness of the committee they will adopt. The committee as a whole should consider liaising with sustainability resources on campus to plan and implement programs, training, and workshops to increase awareness of sustainability throughout the department. Committee members should also increase their engagement with sustainability on the UW campus and beyond. The committee should may want to conduct further research on what may be the most beneficial and efficient way to do this, and consider implementing annual reviews of the committee's progress.

**Main Points**
The HFS Sustainability Committee should recognize its large footprint and the power that it has on influencing HFS staff, residents, and vendors, as well as the influence that HFS may have on the greater UW community. This should act as a motivating factor for taking action on improving the function of the Committee. If changes are made to the structure and format of the meetings, and improvements made to representation and attendance, the committee will be able to operate more efficiently. If changes are made to the long term agenda and focus of the committee, the committee will be effective in achieving its goals. The HFS Sustainability Committee should implement the recommended changes so they can continue to serve as leaders in sustainability, address important issues such as climate change, and have a positive and lasting impact on the environment.


OZZI Reusable Containers Program
Evaluation

By
Kyler Jobe
Bacha Tovuudorj
Maddie Corbett
and Stefan Mahler

In association with
Jenna Truong and Martine Renolds
of SEED

An analysis of introducing
OZZI reusable containers
into the HFS Dining Halls on
West Campus and
recommendations to move the pilot program forward, reach more
students, and increase waste diversion efforts.
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**Introduction**

Disposable to-go containers are widely used across all University of Washington dining locations. These containers generate a large amount of unnecessary waste which negatively impacts the environment. Our clients at SEED, Jenna Truong and Martine Renolds, introduced us to their reusable container pilot program which would eliminate this problem. This pilot program partners with OZZI, the provider of the reusable containers and the collection machine, as well as with Housing and Food Services dining locations and staff. Students participating in the pilot program were given a token, which allowed them to receive an OZZI reusable container to put their meals in. After eating their meals, students were required to rinse out the containers and return them to an OZZI collection machine, where they would get a new token and the container would be thoroughly sanitized. Our role in this pilot program was to offer a program evaluation on user experience as well as suggest future improvements based on our findings.

**Objective**

The primary objective was to gather and analyze data from three surveys and a focus session to draft a comprehensive program evaluation to determine the feasibility of the SEED Reusable Container pilot program.

**Research Questions**

Our main research question is how feasible is the SEED Reusable Container program? How effective will it be if it is implemented campus wide?

**Methods**

To answer our research question, our group worked with Jenna and Martine to develop a series of surveys and a focus group to gather qualitative and quantitative from the participants. This data was then coded when what we felt was a majority of participants had responded, which was around 60 students.

**Surveys**

The first survey was pre-developed by SEED and focused on questions about user experience, interactions with HFS, values and attitudes, and frequency of use. The first type of questions in this first survey consisted of demographic data, such as dining level, new or
returning, and in-state, out-of-state, or international student. These questions gave us a baseline understanding of who was participating in the pilot program. We then asked participants to explain their experience with the containers, the collection machines, the dining staff’s knowledge, how often the containers were used, to rate their experience from 1 to 5, as well as why the participant was interested in the program. These questions gave insight into what was going well for the program and what was not. They also gave a bit more information as to what motivated students to participate. To understand more about what motivated students, the survey asked a series of questions regarding feelings and attitude towards environmental stewardship. These questions asked participants to rate from 1 to five how important a variety of green acts are to them, such as recycling, composting, or picking up litter, and to rate from 1 to 5 how a variety of factors motivated their green actions, such as health, future generations, or people in their community.

The second survey was developed by our team with the goal of building off of data received in the first survey. This lead of second survey to cover many of the same topics as the first survey, including user experience, interactions with HFS, and frequency of use, while adding a new type of question regarding convenience. Our group also opted to leave out questions regarding values and attitudes for this survey because we felt it was unlikely these changed in the short time the pilot program had been running. We kept old topics, such as the user experience questions, to track how they changed over time. The new topic regarding convenience was thought of by our group in response to what we thought students would find valuable in the program.

Our third and final survey moved again to frequency of use and values and attitudes questions as their main topics. This decision was made to determine if students were impacted by using a reusable container for the better majority of the quarter. Our group also asked if students would like to see a program like this implemented across campus.

Focus Group

Our final method for gathering data was to hold an informal focus group. These questions were used to get strong qualitative responses about topics we felt were arising from our surveys. These questions consisted of the biggest issues from dining staff, display of the OZZI machine, why students got involved, where they use the containers, how they thought UW was in terms of
sustainability, and preferences they had for the program. The findings from our focus group helped tie together some of the responses we had been receiving in our surveys.

Results

Survey 1 (n=66) provided information about the participants of the program and the initial result of the pilot. Out of 66 students, 68.2% were new residents in the west campus and 31.8% were returning residents. The survey also indicated the environmental consciousness of the participants of the program.

Fig 1.

On a scale from 1 (never) to 5 (always), how often do you do the following actions?

![Bar chart showing frequency of activities]

Figure 1 illustrates that the majority of students have a high frequency of participating in environmentally aware activities, with 22 students who are always looking for ways to reuse things, 49 students who always recycle cans or bottles, 28 students who always encourage friends and family to recycle, and 30 students who always compost food scraps.

Fig 2.
Figure 2 also shows a positive trend with students environmental concern with various consequences. These two results indicated qualitative data of our participants and could also explain why the subjects participated voluntarily in the program.

Survey 1 also provided important quantitative data of the usage rate of reusable containers.

Fig 3.

Figure 3 shows the usage rate of the containers in the first two weeks of the pilot program, with 12 students who have not used it, 19 using it once a week and 18 students using it twice a week. We understood that this question does not account for the fact that some students might not ever eat at Local Point, so we asked another question in the first survey illustrated below in Figure 4.
Figure 4 shows the usage rate of the reusable containers as opposed to using compostable container/plates/bowls. Quantitative data shown from figure 3 and 4 can be used to compare usage rate over time in future surveys.

Survey 2 (n=66) provided us with quantitative data on the usage rate of the reusable containers in the third and fourth week of the pilot program. Figure 5 illustrates how many times the participants used the container in a week.
Compared to week one, a significant improvement of the usage rate can be seen between figure 3 and 5. With the number of people who used the container zero times a week decreasing from 18.2% to 6.1% and the overall number of people who use the container two or more times a week increasing in every frequency.
In survey two we also saw a significant improvement in the number issues with the dining staff illustrated in figure 6, with an increase in the number of people who reported no issues from 25.6% to 50%. We also measured the overall satisfaction with the program in survey 2.

Fig 7.

**What is your overall satisfaction with the program so far?**

66 responses

![Bar chart showing overall satisfaction](chart.png)

Figure 7 illustrates the overall satisfaction of the program so far by the participants in week three and four of the pilot program with the majority of students reporting high satisfaction, and 25.7% in the medium and low range.

In survey 3 (n=39), the usage rate of the containers stabilized, and the report of issues with the program decreased overall, with less occurrence of problems with the machine, dining staff and tokens. After seven full weeks of using the containers, survey 3 was the final data we gathered on the feasibility of the program, besides the focus group.

Fig 8.
Figure 8 shows the likelihood that the participants would use the containers if the reusable container program were implemented across campus, with 87.1% of participants reporting high likelihood of using the containers and 12.6% reporting medium to low likelihood.

The focus group (n=2) was insightful on raising specific issues and details about the user experience of the pilot program. Students were generally satisfied with the program reporting “Been loving it, containers themselves work well. The system is pretty good.” and “The containers are pretty nice and easy.” Issues that came up in the three surveys were also expanded upon more by the participants in the focus group. A student reported that “The machine is a little weird. I had a previous issues with machine. It wouldn’t scan one night and it worked fine the next day. If the machine isn’t consistent, it [containers] might pile up.” and another student reported that “I have lost the token and had to go to the SEED office. The token can be a burden sometimes.”

Overall, from the surveys and focus groups, participants reported high satisfaction with the program and an increase in usage and ease of use over time. We were able to identify three main issues from the feedback provided from data gathered, which are dining staff knowledge, use of token and the collection machine.
Discussion

While the data gathered from our surveys identified key challenges and opportunities of the users’ experience in the pilot program, we would have liked to better assess the values and perceptions related to the users’ participation. The primary barrier to this goal was limited participation in our focus group, which was inhibited by the tight schedule created by OZZI’s shipping delays. Relying on surveys alone for rich qualitative, subjective data is insufficient.

Additionally, the self-reported usage data observed in our surveys is unlikely to be representative of the entire UW population if the program were expanded campus-wide. Because participants in the pilot program opted-in with little additional incentives, the population surveyed may be especially inclined to use the containers. Our data suggests this population might be especially interested in improving their personal sustainability and therefore more likely than the average student to use reusable containers and more willing to cope with the associated inconveniences. Though we do have limited anecdotal evidence from our focus group (n=2) that students outside of the pilot program are positively interested in the program.

Recommendations

1. Use Husky cards as tokens

Our data from the surveys show that many students think the tokens used to retrieve new containers are very easy to lose. One student said, “having to carry tokens is inconvenient. If I forget my token, I don’t get the container. It would be nice if we could use our husky cards, and just have it programmed so that the cashiers know that we are in the seed program.” Using the Husky card as a replacement for the token would make it more convenient for students, as it would not be easily misplaced and it would be much easier to keep track of. Husky cards also offer the opportunity to leverage much better usage data about the containers to further optimize the quantity and locations of OZZI containers and collection machines. Admittedly, it would be time consuming and take a lot of work in order to program the Husky cards to represent the tokens and the machines to accept the Husky cards. For this reason, Husky cards do not need to be linked the OZZI program during the pilot phase, but should be considered necessary for campus-wide deployment.
2. Increase HFS Collection machines in dorms, food trucks, HUB, etc.

Our data shows convenience is an important factor in determining to what extent students participate in the pilot program. The collection machines and self-wash requirement of the container program already add several minor inconveniences to the container process, so making the program as convenient as possible is essential to long term success. We recommend purchasing additional collection machines to install in other highly trafficked dining areas and residence halls. Campus-wide deployment should also consider the opportunity to reduce waste from single-use containers at food trucks, the HUB, and North Campus. To make the containers practical and convenient in these locations, additional collection machines will need to be installed. The collection machines are expensive to purchase but have very low recurring costs, which we expect to be mitigated by the substantial savings HFS will observe from the reduced demand for compostable to-go containers (HFS is still gathering and analyzing this financial data). Additional machines will increase the burden on HFS staff to collect and process containers from sparser locations, as well as introduce new challenges with regular maintenance and upkeep of machines. At this time, HFS staff are already adjusting to the challenges of the new containers and processes, so these additional burdens should not be overlooked. Nonetheless, establishing a wider network of collection machines and a more robust program for maintenance and upkeep of the machines is essential to the success of the program.

3. Increase visibility of OZZI boxes at food stations

55% of HFS staff didn’t know about the containers when students asked for them. To address this awareness issue, we recommend drafting semi-permanent signage, or simply stacking the containers in a highly visible location at each participating station. Prominently presenting the containers on top of food station counters would improve HFS staff awareness of containers (even among new-hires and untrained employees) as well as educate students about OZZI containers. Signage would also remind students to use the OZZI containers. However we recognize that space at dining stations is capacity-constrained and may cause several issues, including: Questions about signage may slow down service at stations; signage might be a physical obstacle for HFS staff. HFS decision-makers can choose either signage or a more prominent home for OZZI containers according to what is least disruptive to customer service interactions and kitchen workflow.
4. Improve dining staff training.

In our first survey, 29 students reported an issue with the dining staff’s knowledge of the program and 10 students reported not having any issues. Comparatively, in our second survey many students reported an improvement in the dining staff’s knowledge of the program citing “Some dining staff still don’t know what I’m talking about when I ask for it but it’s getting better.” In the second survey, results improved slightly, with 19 students reporting an issue with the dining staff’s knowledge, while 19 students responded with no issues.

With consultation with HFS Director and the Assistant Director for Residential Life, we can attribute these issues to two causes. Firstly, it is the high turnover rate of the HFS dining staff throughout the quarter. Once new employees come in, they are not regularly acquainted to the program and are confused when students ask for containers. We talked about the possibility of dining staff managers giving a quick orientation to new and incoming employees about the program. A student reports that “It is often that staff do not know what the green boxes are or how the system works, but they usually will ask a manager and figure it out.” Secondly, it has to do with the timing of the pilot project. Since the project kick-off was delayed from having it start at the beginning of the quarter to starting off in Week 4, there was a challenge in orienting staff as well as students in the program to the OZZI process. Through analysing other schools implementation practices, we recommend launching the program over the summer quarter, so that it becomes standardized practice once the new academic year starts and the staff are more used to the program. As seen from the results of the two surveys, staff’s knowledge of the program increased drastically over just two weeks.

Next Steps

We recommend continuing to develop the analysis we’ve begun in this report by collecting additional data from new participants, conducting a larger focus group, and collaborating with other universities with similar reusable container programs. In the winter pilot program, surveys should be even more focused on user values. It may also be effective to ask if the participants were referred by previous participants, friends, or if they heard about the program by other means. This information may be indicative of how the wider student
population may be engaged by the program. It will also be useful to follow up our small focus
group with an additional session. The conversations and data we collected in our focus group,
despite its narrow size, were rich and would be extremely useful if a wider sample of participants
could be reached. Lastly, we recommend establishing an informal advisory board of dining staff,
professionals, or other stakeholders from other universities utilizing OZZI containers or a similar
program. Right now, there is little to no sharing of data or strategies between universities
regarding reusable containers, despite OZZI’s extensive list of clients. If possible, this network
would foster the best possible outcomes for UW’s future with reusable containers.

Conclusion

Based on the data collected during our program evaluation, we found that students are
largely motivated by their sustainable mindsets to participate in the Reusable To-Go Container
program. Despite the negative feedback in our surveys regarding OZZI collection machine
issues, container issues, token issues and dining staff issues, we believe our recommendations, as
detailed in the Discussion section, would allow for the SEED Reusable Container program to be
feasibly implemented campus-wide.