

Project MÜG

A Reusable Mug Endeavor



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1. Executive Summary:

1.1 Problem:

Every year the Viking Union (VU) Café at Western Washington University (WWU) alone generates enough single-use cup waste per to fill approximately 31 dumpsters to the very top, based on weekly cup purchases (Dining Services correspondence, 2011 WWU Waste Audit). With seven on-campus cafés using single-use cups, the total single-use cup waste generated at WWU is significant. Although these cups are compostable, the majority of them end up in landfills emitting methane, a greenhouse gas, which is over 20 times more effective at trapping heat than carbon dioxide. The sheer volume and improper disposal of single-use cups is unsustainable and has negative effects on WWU and the community as a whole.

1.2 Solution:

We propose to create a pilot reusable mug rental system at the VU Café. This system is designed to decrease single-use cup waste by increasing the convenience to participants of using reusable mugs. Participants will be able to be served their beverages in reusable mugs and when done, drop the dirty mug off in the VU. Mugs are then cleaned by dining services and redistributed back to the VU Café. This will help WWU reduce the amount of single-use cup waste generated, as well as decrease the amount of money Western spends on the purchase and disposal of single-use cups.

1.3 Funding:

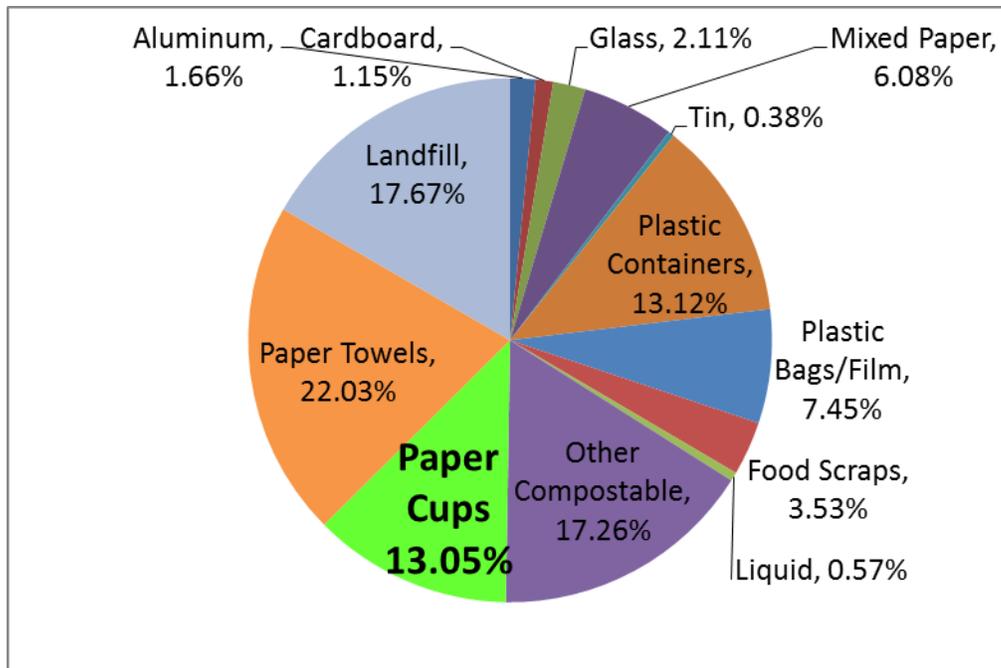
An estimated \$550 is needed to implement this pilot program. This money would go to purchasing initial supplies. There are other minor costs associated with the program that are

discussed in the budget section. Funding is yet to be determined; possibilities include the Green Fee or other grants.

2. Statement of Need:

WWU is spending \$21,780.52 on single-use cup disposal on main campus facilities, not including residences halls, every year (WWU Refuse Collection Cost Fiscal Year 2011/12). To put this in perspective, this could roughly pay for an in-state student's on-campus living and tuition for a full year at WWU. Potentially even more than this is spent on single-use cup disposal, as these cups are compostable, and the cited number reflects only that spent on landfilling. In a time when funding for higher education is limited, the school's money should be going to something more beneficial than landfill costs.

Although compostable, single-use cups generate over 13% of WWU's landfill-bound waste by volume (WWU 2011 Waste Audit). When compostable products end up in landfills, they are not exposed to oxygen or soil and therefore cannot decompose properly. These items then produce methane, which is a greenhouse gas that is over 20 times more effective at trapping heat than carbon dioxide. Reducing our high percentage of single-use cups in landfill is an opportunity to reduce WWU driven greenhouse gas emissions.



(From WWU 2011 Waste Audit)

Project MÜG will benefit WWU. It will save WWU money in terms of single-use cup disposal and purchase. Greenhouse gas emissions stemming from the university would be reduced as methane from single-use cup breakdown in landfills would decrease; as would the transportation emissions from trucking waste, purchasing, and disposing of single use cups. Additionally, Project MÜG will contribute to the Office of Sustainability's goal to become a zero waste university by reducing the amount of waste generated on campus. Since a project like this has not been implemented with reusable mugs before, it is an opportunity for WWU to take the lead in a new type of project, and enhance our reputation as a university focused on sustainability.

3. Project Description:

3.1 Objective:

Our project will decrease the amount of single-use cup waste generated on campus by implementing an environmentally friendly, convenient system for using reusable mugs when buying beverages on campus. This pilot would hopefully be implemented by Spring Quarter 2013.

3.2 Methods:



The pilot system will start with 150 reusable mugs and 40 participants. The higher number of mugs ensures that participants will have access to a mug, even if some are being washed or distributed.

To participate in project MÜG, participants will first pay a \$10 charge on their WWU account; \$8 of this charge will be refundable when the participant chooses to leave the system, \$2 will be a non-refundable service fee that will be paid per quarter. Having the charge on the WWU account assures that there will be a record of this transaction so that the deposit will be sure to go back only to those who are a part of the program, not just anyone who found a mug or card. The \$8 deposit amount was chosen to ensure the cost of mugs and other supplies is covered if the participant does not return a mug and to encourage return of the mugs, as \$8 is higher than the cost to buy a reusable mug on campus. The \$2 charge will go towards future project expansion and covering the cost of handling mugs. This amount was chosen in part because of input from our focus group. To be able to have a charge created on the WWU account, programs must go through a fee approval process with the Office of Business and Financial Affairs. We have begun this process.

Once the charge is paid, the student will receive a laminated card with the MÜG logo on it to be used for exchange. When brought to the VU Café, the card can be exchanged to receive a beverage purchased at this café served in a reusable mug, in which case the case a key will be added to the register to track the use of Project MÜG. Alternatively, a participant can exchange the card for an empty clean mug if they desire to use it elsewhere. In this case, a tally sheet will be provided to track the use of Project MÜG, as tracking on the registers requires a purchase. After the student is done with their beverage, they can drop off their dirty mug at the VU Café, or potentially the Information Desk, in exchange for a new MÜG card. When the participant would like another mug, they can redeem their MÜG card for another reusable mug.

Dish washers at the VU will collect dirty mugs once a day, not including weekends. The mugs will be washed in the VU dish washing facility (this is separate than the dish washing facility for the VU dining hall). The dish washing machines WWU uses are energy and water

efficient. Additionally, detergents used are chosen because of their low environmental impact. Once clean, the m will then be redistributed in the VU Café by dish washers. Dining Services has been consulted and is on board with this operating system.

If a participant loses a MÜG card or mug, there will be a non refundable fee of \$5 to receive a new card. This is to cover the cost of purchasing new material, while keeping the price low enough that participants are willing to opt back into the program. If a participant loses a card or mug a second time, they will forfeit their initial \$8 deposit and pay a new one to continue using the program. The reason that the second time loss penalty is greater is to give participants incentive to keep track of their mugs and cards. Since there is a minimum purchasing order for many of the project materials, if people continuously lost their mugs or cards, many more would have to be purchased than simply the required number to replace the lost mugs, adding a large cost.

There are many ways that we can advertise the program to campus members to find the initial 40 participants. Posters and notices at coffee shops would be the best form of advertisement because it would target people who regularly buy coffee on campus. Handouts, fliers and email lists would also be useful to inform more people about the program. Another possibility is to include information about the program in the Western Front.

3.3 The MÜG

The mugs will be purchased from Whirley Drink Works because Dining Services has an existing relationship with this company and can receive a 20% discount. The model is a plastic 20 ounce tumbler without a handle (model number SC-20). We chose a model without a handle to take up less space due to storage concerns in the VU Café. The 20 ounce size was selected to ensure a participant would be able to purchase up to a venti sized drink if desired. While it is

plastic, the mug is BPA and phthalate free as well as dishwasher and microwave safe. Being dishwasher safe is mandatory for this program, which limited the mug options.

In order to print a graphic on this mug through Whirley, a minimum purchase of 500 is required. As a pilot project, 500 mugs would be much too many. Instead, we found an alternative way to have the MÜG logo put on the mugs in order to make them distinguishable. A company called StickerYou allows images to be printed on stickers which are dishwasher and microwave safe. Stickers with the MÜG logo would be purchased through them and applied to the cups. This would enable us to start with 150 mugs for the pilot.

To ensure that using a reusable mug is better than using single-use cups at this scale, we did a brief life cycle analysis. In terms of the energy that goes into creating a reusable mug verses a disposable paper cup like the current ones on campus, you only need to use the plastic reusable mug 17 times for it to be more efficient than using a paper single-use cup if an energy efficient dishwasher to wash in between (Life Cycle Analysis). This analysis did not take into account the environmental impact of the disposal of single-use cups, which makes the impact of the reusable mug in comparison even smaller. Based off personal experiences, 17 uses is well below the average durability of a reusable mug, which means this system will be sustainable in environmental terms.

3.4 Focus Group

We conducted two focus groups to gain general student feedback and to see if students would be willing to participate in Project MÜG. Overall, we found that the majority of participants were excited about the project. Many of them said they often feel guilty when they buy beverages on campus but forget their reusable mugs at home. They also were very

interested in the convenience of not having to wash their own mug and remember to bring to campus. The focus group participants helped us decide on a \$2 non-refundable service fee per quarter; \$2 is low enough where students would be willing to pay it and it is cheaper than buying their own reusable mug. Although we explored a few different options for a token, our focus group unanimously agreed that a laminated card would be best because students almost always have their WWU card on them when on campus, and a laminated card could easily be stored with their WWU card.

4. Budget:

The initial materials costs to start the pilot are laid out below. Funding for this project is still needed and possible sources are the Green Fee or other grants.

Cost Estimates:

Cups $150 \times \$2/\text{cup} + \text{Shipping } \$50 = \$350$

Logo Stickers = \$150

MÜG Cards = \$50 (laminating and printing of 40)

Total = \$550

In addition to the materials costs, there will be some added staff time as a result of the project. This includes collection, washing, and redistribution by the dish washers of the mugs. For the pilot project, Dining Services has generously agreed to provide these services at no cost due to the small scale. If the program expands, service costs could be tracked by having Dining Services keep a log of the amount of time spent handling mugs, which could then be multiplied by the average wage of a dish washer.

5. Future Works:

This project is proposed as a pilot to serve as model for future campus wide implementation of a mug rental system. Our vision for the future of this project is to first expand the project so that it has hundreds of mugs and participants. With more participants, we would then want to involve more locations, ultimately aiming for every café on campus to use the program. With more participants, we would want to have at least three dirty mug drop locations available on south, middle and north campus for ultimate convenience. In order to cut costs and logistics of MÜG cards, we would like to implement a MÜG -trade system run entirely on WWU student and staff ID cards that would improve convenience even more, as most students always have their WWU card and must keep track of it. Not only would this cut costs of purchasing MÜG cards every quarter, we would then be able to track MÜG usage at different locations, and be able to better target our audience. In the long term, we would like to see less person-to-person contact for MÜG return and instead use a machine similar to that of the "OZZI" (in use at the Eckerd College in Florida). This machine would scan a barcode on the MÜG then put a credit back onto your student ID card (OZZI Machine).

In the future, we would like to see incentive for participation in this program increased. This could be done by providing a free drink after X amount of MÜG uses. For ultimate incentive, a surcharge could be added to every drink purchased using a single-use cup, much like the current bag ban system in Bellingham. Also, if there is a way to remove the quarterly service fee in the future and still have the system work we would like to do so.

Other ideas for future implementation of this project include different sizes and styles of mugs to better accommodate different drink sizes and types, such as smoothies or fountain

drinks. One option of particular interest is the Geode, which is more sustainable than a plastic mug and designed by a WWU graduate. The Geode consists of a standard sized pint glass that is sealed into a plastic leak-proof shell. Both the interior glass and the exterior case are dishwasher safe (Geode Industrial Drinkware). Additionally, we would like to see an option to buy-in to Project MÜG at the time of tuition payment. Not only would this be very convenient for students, it would also spread awareness about the project in hopes to reduce single use cup waste even further.

6. Conclusion:

Project MÜG incorporates environmental, economic and social sustainability. It will significantly reduce the volume of waste sent to landfill every year, reducing WWU's footprint. It will reduce the amount of money being spent on single-use cup disposal and purchase. And it will allow the campus community to participate in sustainability while contributing to WWU's image as a leader in sustainability efforts. The entire WWU community will be served by providing a convenient, cost-effective and sustainable option for anyone looking to purchase a beverage on campus. The minimal startup costs of the pilot project will be outdone by the many benefits. This program could serve as a model for implementation across our campus and many others. Our university has an incredible opportunity to be the first to implement such a program with reusable mugs that we should not let pass by.

7. Appendix:

Case Studies

1) GoBox, Portland, Oregon:

The idea for this project was based off a business in Portland, OR called GoBox. GoBox was created to reduce the amount of waste generated by food carts. It allows customers to opt into the program through a subscription fee of \$12 per year. For this fee, the customer receives a token that can be exchanged at participating food cart vendors to be served in a reusable container. When the customer is done with the container, they return it to designated locations and receive a new token. Many of the return locations are local businesses, who appreciate the influx of potential customers from the use of their store for container/token exchange. The dirty containers are then collected via bicycle and taken to partner restaurants for washing. Once clean, the containers are taken back to food carts also via bicycle.

Originally, a pilot of this program was started 2 years with 3 vendors, 30 subscribers, and about 100 containers. It was then launched as a business in the summer of 2011 for under \$20,000. Currently GoBox is a profitable business operating with around 1,000 subscribers, over 50 vendors, and processing around 300 containers a day. The community reaction to it has been positive and it has received many mentions in the media. For more information visit www.goboxpdx.com.

2) Eckerd College, St. Petersburg, Florida:

The Eco-Takeouts program was first developed in 2004 in response to a waste audit that was conducted by one of graduate students. The programs main purpose was to reduce waste on campus. Three years later it received grant money from Eckerd's Environmental Research and Education fund and the project was implemented. The overall cost was \$32,000 with an additional cost \$6,000 for the OZZI machine which is similar to a reverse engineered vending machine that collects the dirty clamshells. The total student body at Eckerd College is 1,850 students.

G.E.T. Enterprises was chosen as the company to provide the clamshells as the program is for profit. "Annually this program is estimated to keep 32 million disposable containers out of the landfill." They chose this company because they wanted their containers to resemble that of a takeout container. After doing the lifecycle analysis of different containers, they found G.E.T. Enterprises to be the best option. Their dining services food supplier, Bon Appetite, sourced the containers for them.

Students, faculty and staff were very excited when the project was implemented because it was more environmentally friendly. They did have some challenges however. Between 2009 -2011, the program was in non-existence because students were not returning their clamshells; this turned out to be there biggest challenge. Since 2011, the program is back up and running and has been extremely successful. "Spring semester 2012 there were about 1,200 clamshells collected in the OZZI machine and Bon Appetite has not offered a styrofoam option since 2007. To date, 116 colleges have adopted the program or are in the implementation process." Evan

Bollier, my point of contact at Eckerd, suggested charging students just above the cost of the clamshells (or MUG), to maintain a revolving fund. "That way, the fund will never run out and you'll continue to have enough money to buy more clamshells in the future."

Insider Interview Questions with Eckerd College (Evan Bollier):

Contact name & position

Evan Bollier, "Sustainability Fellow" Gamma Office. Graduated in 2011 and took on re-implementing the program.

Purpose of the project?

Reduce waste

"Size" & cost of the project?

\$6,000 for the OZZI machine, ~\$32,000 for the project

Timeline for project?

Fall of 2004 Audrey Copeland conducted an audit for Professor Ormsby's Introduction to Environmental Studies class... In July of 2007 the Environmental Research and Education Foundation awarded Eckerd College a \$32,000 grant to develop and implement the program at locations across the nation. In the fall of 2007 G.E.T. Enterprises, a Houston-based manufacturer, agreed to construct a prototype. In the spring of 2008 the containers went live at Eckerd College.

Players/stakeholders involved?

cafeteria manager

sustainability coordinator/advocate

business office/accounting representative

information technology representative

student focus group

Biggest challenges?

1. Getting the containers back from students
2. Many students lose these tokens, some sign up with false student ID information
3. Sometimes the cafeteria workers lose the sign up sheets.
4. Hypothetically the system should be revolving fund but we are losing money rapidly.

How is the project progressing now?

It fell into nonexistence between 2009 and 11. Our biggest challenge with the program is getting students to return the clamshells to the cafeteria. There is a sign-up sheet at the

main register and students can buy a clamshell at \$5 and have it charged to their student account. They take the clamshell out and hypothetically bring it back and return it to the OZZI machine we have. The OZZI will give you a token after it accepts the clamshell and the student can hold onto it until they want to exchange the token at the main register for a clean eco-clamshell.

Related future projects?

To date, 116 colleges have adopted the program or are in the implementation process.

Try to get students to return the containers

3) Unintended consequences?

What were the biggest challenges with getting this program started?

Evan- Graduated in 2011 and took on re implementing the program. It was in nonexistence between 2009 and 11. Our biggest challenge with the program is getting students to return the clamshells to the cafeteria. There is a signup sheet at the main register, students can buy a clamshell at \$5 cost and have it charged to their student account. They take the clamshell out and hypothetically bring it back and return it to the OZZI machine we have-video. OZZI will give you a token after it accepts clamshell and student can hold onto it until they want to exchange the token at main register for clean eco-clamshell. Many students lose these tokens, sign up with false ID information, sometime cafeteria workers lose signup sheets. Hypothetically system should be revolving fund, losing money rapidly. Spring semester will need to charge \$10 in order to cover the costs of the clamshells and OZZI.

Why did you choose to use G.E.T. Enterprises as opposed to another company?

They are the only company that sells "eco-clamshells." We wanted our container to resemble that of a takeout container, did lifecycle analysis of different containers. Our supplier(Bona Batit) sourced the containers for us from GET enterprises.

I have researched other universities that have implemented similar programs but are not for profit. Do you recommend using a for profit or nonprofit program?

Each clamshells costs about \$5.00 if bought in bulk (300 plus). We have the OZZI machine, but it requires a service contract which tacks on some extra cost to the program. I'd say if you're trying to maintain a revolving fund, aim to charge students just above cost. That way, the fund will never run out and you'll continue to have enough money to buy more clamshells in the future.

Our campus uses Aramark as our dining food service. Was it easier making the switch using Aramark as opposed to another company? How eager were they in helping you out?

We have Bon Appetit as our cafeteria vendor. They were huge in getting this program up and running. Eckerd buys the clamshells and Bon appetit bought the OZZI machine- \$6000 (they wash all the dirty clamshells that are collected it in).

Since you started the program in 2007, have you seen much growth? Would you say the benefit outweighed the cost?

There has been expansive growth. Spring semester 2012 ~ 1,200 clamshells collected in the OZZI. "Bon apatit" not offered a Styrofoam takeout option since 2007. If we wanted to be greener we wouldn't offer clamshell program since eventually some clamshells will be recycled/ thrown away after students move out at the end of the year or graduate.

3) **Pacific University, Forest Grove Oregon:**

- Reusable to-go container program
- Started Fall 2009
- Purpose of the project?
 - Reduce waste while providing more convenience to students
 - No compost available in county so this is their response
- "Size" & cost of the project?
 - Much smaller school than WWU, have about 1200 students but gave each one a reusable to-go box
 - Storage: 100 cases aka 1200 cases sitting on loading dock. Went to residential halls and dropped off boxes and their job to distribute.
- Timeline for project?
 - Took about 4 months from initial idea to ordering & implementation of boxes. Takes about 6 weeks to order boxes.

Players/stakeholders involved?

- AARAMARK (paid for half)
- Residence Halls (paid for other half)
- Students & Staff
- Outside community - they often come in for meals as well since located centrally within the city
- Reception/perception of the project of the stakeholders?
 - Idea received very well right from the get go. Customers within city can purchase boxes as well as faculty/staff.
- Biggest challenges? (at least three)
 - Not getting boxes returned because people don't bring them back
 - Paying for start up costs – residence paid half and AARAMARK paid half
 - Cleaning & distribution of boxes
 - Distributed through residence halls since they have more storage and immediate access to students.
 - Students living on campus get them for free. Students who don't live in residence halls just go and purchase them. ~\$3.50 for one year.
- Results?

- Website says their project cut down use of regular to-go boxes by 78,000 but this number is old. Bethany says that number grows by 40,000 every year.
- Don't purchase ANY disposable to-go boxes anymore.
- People know the drill even in the outside community.
- Related future projects?
 - Trying to go paper cup free. Talked with AARAMARK about it. Get reusable cups instead. AARAMARK said if you could figure out how to do it – do it.
 - Already banned bottled h2o.
- Unintended consequences?
 - Haven't purchased to-go boxes in 2 years.
 - Only problem is they don't bring them back very well. Doing campaign to get boxes back. Made "wanted" posters. Enter students who bring them back into raffle.
- Other questions....
 - What type of material are boxes made of?
 - Thick reusable plastic. Health inspector fine with everything
 - Who cleans them?
 - Dining services does. Not that much of a burden, but again, much smaller school.
 - How has it been working with AARAMARK?
- Focus on peer institutions, if you can:
<http://www.wvu.edu/upb/FactsandComparisons/peerinst/peerlist.pdf>

Projects been going on for 4 years.

Much smaller campus than WWU.

Work with residential and retail, partnered with dining program.

Housing purchased half and school purchased half. One per student. Buy new containers every year.

- What percent of people are using the program?
 - All.
- \$ saved and initial cost
 - 1200 students on meal plan. Faculty and other students purchase for 3.50 and give box box at end of summer
- Does dining services do extra washing cycles to accommodate cleaning of boxes?
 - Not much more of a load. Bring back to dining room.
- How do you distribute? How do you return?
 - Get pos system to monitor and track boxes.
 - Have key tags/cards to hand out for when not a meal period.

ARAMARK Green Thread programs are used throughout Boxer Dining.

Bethany Bigelow
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Phone: 503.352.2217

Additional Links:

Beyond Disposables: Eco-Clamshell Reusable To-Go Program-
http://erefdn.org/images/uploads/Beyond_Disposables.pdf

Eckerd College Program- <http://www.eckerd.edu/green/waste/ecclamshell.php>

GoBox: www.goboxpdx.com

8. Works Cited:

Geode Industrial Drink Ware:

<http://www.kickstarter.com/projects/254536584/geode-glassware-made-portable>

StickerYou: <http://www.stickeryou.com/>

2011 WWU Waste Audit

Life Cycle Analysis:

<http://sustainability.tufts.edu/wp-content/uploads/Comparativelifecyclecosts.pdf>

WWU REFUSE COLLECTION COST FOR FISCAL YEAR 11/12

OZZI Machine: <http://dining.umd.edu/whats-new/1088>