

# SUSTAINABILITY INITIATIVES BY STUDENT ORGANIZATIONS FUNDING PROPOSAL

## Part I - General Information

Name of Student Organization	Office of Energy and Sustainability Recycling Team
Contact/Responsible Person	Serena Emanuel
Contact Office Held/Title	OES Intern
Contact Email Address	<a href="mailto:serenae@vt.edu">serenae@vt.edu</a>
Contact Telephone Number	(703)-803-7322

## Part II - Project Cost Information

Estimate Cost of this Proposal	\$83,496	See Part III.C
Estimated Savings –	\$51,424	See Part III.D
<b>Net Cost of this Proposal</b>	<b>\$32,002</b>	

## Part III - Supporting Information

### A. Please describe your sustainability initiative and attach supporting documentation.

This initiative would expand the Reusable To-Go Container program that is currently offered at West End Market, Owens Food Court, and Turner Place to Hokie Grill, Dietrick Dining Hall, Squires Student Center, and Perry Street Parking Garage. In addition to the purchase of new reusable to-go collection units, the initiative would retrofit the existing Ozzi Machines with Hokie Passport capabilities—to reduce the confusion and inefficiency associated with the use of tokens.

The Reusable To-Go Container program itself reduces the usage of single use disposable containers on campus, which add to the amount of landfill waste Virginia Tech produces on a daily basis. Additionally, the improvements to the program will expand the audience and usage of the program to become more convenient, user friendly, and organized. The addition of Reusable To-Go collection units at the locations of Hokie Grill, Dietrick Dining Hall, Squires Student Center and Perry Street Parking Garage will make participation in this program more convenient.

This expansion requires the purchase of four Reusable To-Go collection units such as the Ozzi Machine which is used currently. OZZI machines are manufactured by the company AGreenOZZI. More information along with the exact machine details can be found at: <http://www.agreenozzi.com/>. Figure 1 shows an image of a typical OZZI machine.



Figure 1

In addition to the purchase of 4 new collection units on campus, this proposal includes the request for funding to retrofit the 3 current OZZI machines to accept Hokie Passport.



Figure 2

The current process for the Reusable To-Go container program is demonstrated visually in the video, “How To: Reusable To-Go Containers at Virginia Tech”. (Available for viewing here: <https://www.youtube.com/watch?v=8R2BkmMlKwo>). The steps for the process can also be found in the “Meet Ozzi” visual to the left (figure 2).

The proposed retrofit for the OZZI collections units to accept Hokie Passport will change the current process for participating in the Reusable To-Go container program. In lieu of receiving a token after the deposit of a to-go Container, a virtual credit will be added to the student’s Hokie Passport account, which can then be used during the next Reusable To-Go Container transaction.

### Proposal Locations for 4 Reusable To-Go container Collections Units

Each reusable to-go container collection unit requires space (6 feet tall, 3 feet wide and 2.5 ft. deep), an electrical outlet, and an Ethernet outlet. Proposed locations meeting these standards are found below. In some instances, there are Ethernet needs yet to be determined, but these are not factored into the Green RFP

request. Dining Services is willing to cover the costs of installation and monthly costs for new Ethernet connections, where necessary.

Location 1: Hokie Grill entryway, across from Dunkin Donuts.

Electric outlet and Ethernet port are available. "Get a Job" signage is movable.



Figure 3: Potential site for collection unit in Hokie Grill

Location 2: DXpress, near coke machine.

Electric outlet available, Ethernet port would need to be installed.



Figure 4: Potential site in DXpress for collection unit.

Location 3: Squires Student Center, in ABP seating area.

Electric outlet available, Ethernet port would need to be installed.

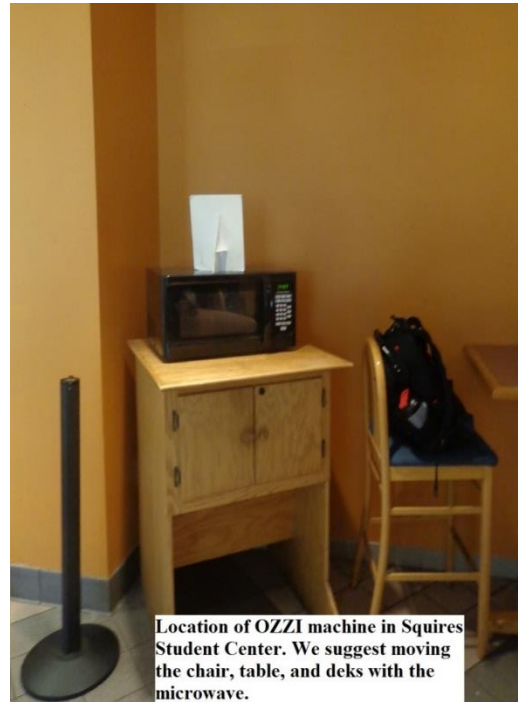


Figure 5: Potential site in Squires Student Center for collection unit.

Location 4: Image at Perry Street Parking Garage

Electric outlet and Ethernet port are available.

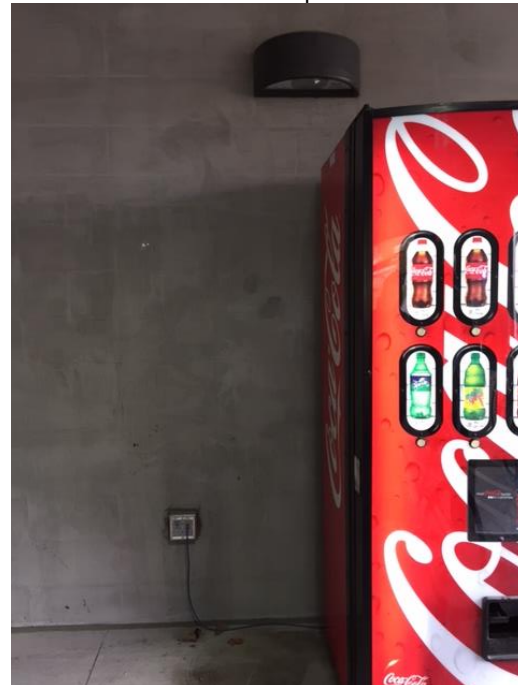


Figure 6: Potential site at Perry Street Parking Garage for collection unit.

## Proposal Support and Self-Sustainment

### Single-Use Containers and Virginia Tech

The current Single-Use containers provided at Virginia Tech are 9-inch compostable containers produced by Stalkmarket, at a price of \$0.17 each.

### Reusable To-Go Program Supporting Information

With the addition of two Ozzi Machines and the time span of 1 year, the program has increased 12% in usage. As the popularity, convenience, and access (due to plans to make the program free) increases, the usage will only continue accordingly. Therefore, the infrastructure of the program needs to be improved to match increasing demands.

Furthermore, this program helps to reduce economic and environmental impact. In first 8 weeks of the Fall 2015 semester, over 25,000 reusable meals have been served, averaging over 3000 meals a week served in Reusable To-Go containers. That is 3000 containers a week that are no longer needing to be composted or going to the landfill. For economic costs associated with this reduction, please see "Cost Savings" and Appendix B.

The Reusable To-Go Program is also desired by the students, as shown through increased usage and the survey below.

### **Reusable To-Go Program Survey**

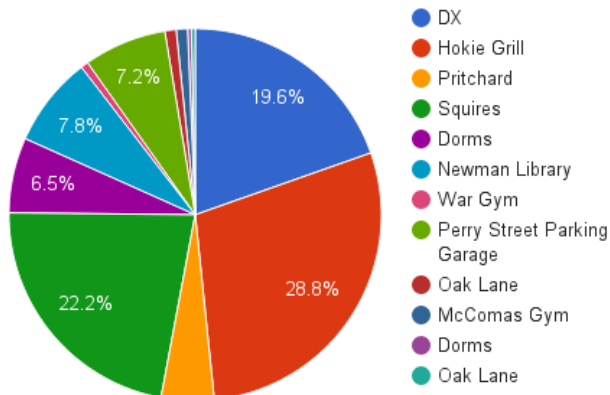
From October 7 through October 26, 2015, a Reusable To-Go Program Survey was released to students through Class of 2019, Class of 2018, Class of 2017, and Class of 2016 Facebook groups, as well as shared by Virginia Tech Office of Energy and Sustainability. The survey was also shared by Office of Energy and Sustainability interns to Facebook friends. The survey garnered 344 responses with Freshmen, Sophomores, Juniors, Seniors, 5<sup>th</sup> Year Students, Grad Students, and Faculty responding.

### Reusable To-Go Program Location Support

As seen through the survey results in Figure 7, the major sources of interest are in DXpress (As in Dietrick Dining Hall) (19.6%), Hokie Grill (28.8%), Squires Student Center (22.2%), Newman Library (7.8%), and Perry Street Parking Garage (7.2%). Other responses included dorms, Oak Lane, bus stops, and the gyms.

The selection of DXpress (specifically Dietrick Dining Hall) will be in close proximity to many of the dorms on campus, while also providing a "late night" option for students to return their containers. Hokie Grill will be a great addition to the dining halls which use the Reusable To-Go Program and also allow for Dining Services to start serving meals in the Reusable To-Go containers. The selection of Squires Student Center will also satisfy those who selected Newman Library and Bus Stops, for it is in close proximity to both of those. Having the collection unit located in a building with Dining Services staff helps facilitate the servicing of the collection units on a regular basis. Lastly, the selection of Perry Street Parking Garage not only allows a 24 hour return option, but offers a location for off campus students to drop off their containers before returning home or after a meeting on the academic side of campus.

### **Where would you like to see an additional Ozzi Machine (to return the Reusable To-Go containers)?**



One sophomore supports the proposed Squires location, stating, "Squires would be a great location for another machine since many buses leave from there and there are evening activities in the building."

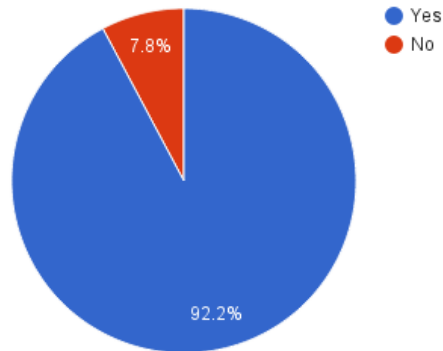
One Senior supports our 24 hour location of the Perry Street Parking Garage:

"More Ozzi Machines would be helpful. Sometimes I have to take it home with me, because I don't have easy access to a machine"

Figure 7: Reusable To-Go (RTG) Desired Locations

Reusable To-Go Program Additional Collection Units Support

**Would you like to see more Ozzi machines on campus?**



Not only are the Ozzi Machine locations suggested in this proposal supported, but 92.2% of the campus population surveyed would like to see more collection units on campus (**Figure 8**). Some reasoning by survey respondents is given below.

Sophomore: "Additionally, there are 3 ozzi machines. If you really want people to use the reusable containers you have to make it accessible".

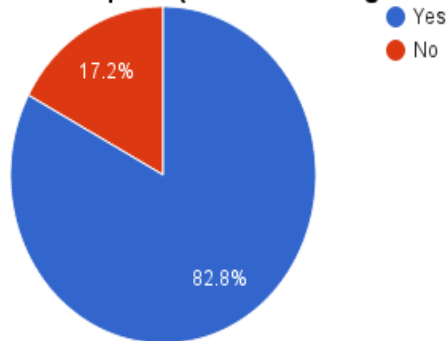
Freshman: "I would use it more often if it wasn't such a long walk to return them all the time".

Junior: "Make more ozzi machines at places that are easily accessible to people who do not live on campus."

Figure 8: RTG Machine Support

Reusable To-Go Program Hokie Passport Support

**Would you be more likely to use the Reusable To Go Program if the Ozzi Machines were linked to Hokie Passports (instead of using tokens)?**



As seen in **Figure 9**, the overwhelming majority of the population (82.8%) surveyed would be more likely to participate in the Reusable To-Go container program if it was linked to Hokie Passports (in lieu of using tokens).

In the additional comments portion of the survey, one freshman stated, "I can't keep track of a token, so I don't tend to carry it around with me. Therefore, I never have it when I need it" and indicated they would be much more likely to use it if linked with Hokie Passport. Similar comments were observed from other survey participants:

Sophomore: "If I could use my Hokie Passport instead, that would be awesome."

Sophomore: "A lot of people want to use it but don't because they lose the token. If it was a swipe of Hokie P[assport] they definitely would use it."

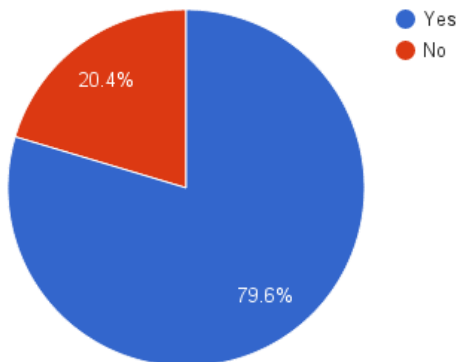
Sophomore: "I have never once used the reusable container because I never have my token, but if the Ozzi was connected to my Hokie Passport, I would use it all of the time"

Junior: "I think that linking the container use to our Hokie passport would increase the usage because people don't want to carry a token or lose the token"

The junior quoted above supports **Figure 10**, which shows that 79.6% of the surveyed population who do not currently use the Reusable To-Go Program would if Hokie Passports were an additional feature.

Figure 9: Increase with Hokie Passport

**Students who do not currently participate in Reusable To Go program but would with Hokie Passport feature**



### Reusable To-Go Program Increase with Free Containers

With the potential for the Reusable To-Go program to be free for all participants by Fall 2016 (Carver, 2015), the increase in usage will be significant, and therefore produce greater strain on the current system—proving necessary upgrades. As seen in **Figure 11 and 12**, freshmen’s use of Reusable To-Go containers, by percentage is greater than Upperclassmen’s usage with 76.6% of Freshmen claiming to use the Reusable To-Go container program versus 65.3% of all other demographics. This difference in usage by class could be linked to the fact that all on campus residents (the majority of which are freshmen) received free containers in Fall 2015, while off campus upperclassmen did not.

**Freshmen's Current Use of Reusable To Go Containers**

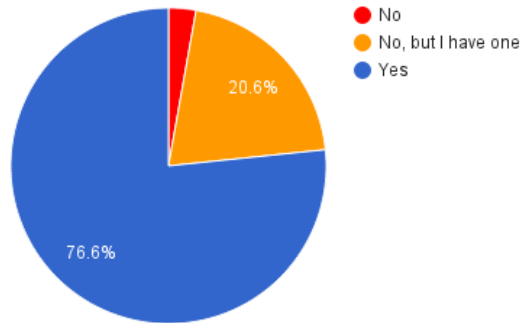


Figure 11: Freshmen RTG Usage

**Upperclassmen's Current Use of Reusable To Go Containers**

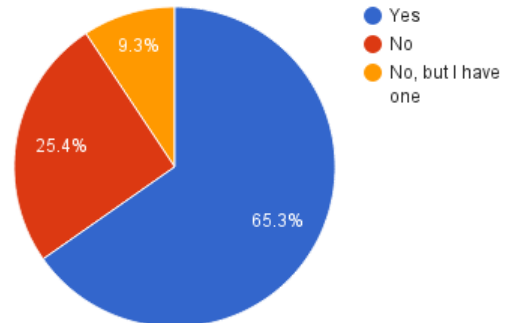


Figure 12: Upperclassmen RTG Usage

### Reusable To-Go Program Education and Outreach



Not only will free containers and additional infrastructure aid in the growth of the Reusable To-Go Container program, but educational and promotional programs provided by VT Dining Services and the Office of Energy and Sustainability intern team have increased usage as well.

Specifically, the Recycling Team of the 2015-2016 Virginia Tech Office of Energy and Sustainability Interns performed bi-monthly tabling events to increase awareness and education. After the OES intern team tabled at Turner Place the Reusable To-Go usage at Turner Place increased from 3.9% of to-go meals served the Tuesday before (9/29/15) to 7.7% of “to-go” meals served on the day they tabled (10/6/15). (Appendix A).

Figure 13: Reusable To-Go Container Program Supported by Virginia Tech President Sands



Similarly, the usage at West End Dining Hall increased from 15.6% to 18.1% of “to-go” meals served after one day of tabling on Wednesday, October 7<sup>th</sup>.

Since then, tabling has occurred at Owens Dining Hall and future tabling is scheduled for the month of November.

A-frames, Table cards, and Social Media from the Office of Energy and Sustainability have also helped with the awareness and education of the Reusable To-Go Container Program.

This increase in usage and availability for an education team further supports the necessity of an expanded Reusable To-Go Container Program infrastructure.

Figure 14: One of the bi-monthly tabling events run by Office of Energy and Sustainability Recycling Team to increase awareness and usage of the Reusable To-Go Program.

## **B. How does this initiative help to achieve the goals of the Virginia Tech Climate Action Committee Resolution and Sustainability Plan?**

The four aspects of the VT Climate Action Committee Resolution and Sustainability Plan that this RFP addresses are numbers 1, 3, 8 and 10 copied below.

“1. Virginia Tech will be a Leader in Campus Sustainability. Sustainability is an integral part of the fabric of the university as it pursues enhanced economic stability and affordability, diversity and inclusion, environmental stewardship, expansion of knowledge, and education of future leaders.”

“3. Virginia Tech will establish a target for reduction of campus GHG emissions to 80% below 1990 emission level of 188,000 tons by 2050. Interim targets from 2006 emissions of 316,000 tons will be: for 2012, 295,000 tons (on path to 2025 target); for 2025, 255,000 tons (2000 emission level); and for 2050, 38,000 tons (80% below 1990 emission level).”

“8. Virginia Tech will minimize waste and achieve a 50% recycle rate by 2020”

“10. Virginia Tech will engage students, faculty, and staff through education and involvement to develop and implement innovative strategies for efficient and sustainable use of energy, water, and materials in all university-owned facilities.”

### **Canon 1**

Through the use of the Reusable To Go containers on campus, Virginia Tech will be a visible leader in sustainability; the use of the containers is a conscious action of Virginia Tech students exhibiting environmental stewardship. Furthermore, the program is economically advantageous and reaches students and staff that eat on campus. Through the tabling events and educational outreach provided by VT Dining Services and the Office of Energy and Sustainability, the students are further educated on the importance of reuse over one-time use items.

### **Canons 3 and 8**

By reducing the number of single-use to go containers used on campus, Virginia Tech will minimize waste created on campus and reduce GHG emissions. Although the single use containers are compostable, the majority of the containers are brought outside of the dining halls (where the only composting facilities exist) and therefore end up in a landfill.

### **Canon 10**

The Reusable To-Go Program, and the expansion of it, will allow students, faculty and staff to become more engaged in sustainable actions on a daily basis. The education of the negative effects of landfills and engagement in a zero waste program is an “innovative strategy[y] for efficient and sustainable use of...materials in all university-owned facilities”.

Please read the following “Ecological Impacts of Landfills,” for more details on how reducing single-use containers advance sustainability on campus and works toward achieving the goals of the VT Climate Action Committee Resolution and Sustainability Plan.

### ***Ecological Impacts of Landfills***

Nearly 50% of waste produced in the United States today ultimately ends up in a landfill, 75% of which has the ability to be recycled or composted (“Waste and Recycling,” n.d.). Much of the municipal solid waste residing in landfills, such as plastic and Styrofoam, have landfill lifespans lasting hundreds of years or more. Many ecological risks arise from the use of landfills as the primary waste management method. While there are many risks associated with disposal sites, the majority can be defined as atmospheric effects, hydrological effects and the resulting health effects.

Atmospheric impacts of landfills include Green House Gas emissions and particulate emissions. Over 90% of landfill gases are methane and carbon dioxide, the remaining 10% includes a mixture of various other gases (EPA, 2012). According to the EPA, the methane produced by trapping decomposing organic materials in landfills are 21 times more effective at trapping solar heat than carbon dioxide, contributing to climate change (EPA, 2012). The methane produced escapes the landfill through either diffusing through the soil or by escaping openly into the atmosphere. Methane is not only a damaging Green House Gas, but can also result in explosion and combustion. Non-chemical atmospheric effects result from the noise pollution as a result from landfill production and management, odor from the decomposing organic materials and particulate emissions such as dust being released into the atmosphere.

Disposal sites also pose hydrological risks. The primary risk is that of leachate. Leachate is the liquid that forms when landfill waste breaks down and water filters through it. Municipal solid waste leachate contains hazardous materials, such as VOC's. Leachate enters the groundwater environment, making aquifers and drinking water sources unusable.

Both of the resulting atmospheric and hydrological effects of landfills pose risks for human health. The leachate resulting from landfills can require costly clean up efforts to make water usable again. The landfill gases also pose potential health risks. The gases not only threaten safety as a result of fires and explosions, but the gases contain toxic compounds that may cause health issues such as respiratory issues, fatigue, and sleeping disorders. The ecological impacts of landfills continue to rapidly increase with the increase in consumption, and will continue to do so until proper action occurs. Reducing disposable To-Go containers would reduce trash in the landfill.

**C. What is the cost of your proposal? Please describe in adequate detail the basis for your cost estimate.**

The OZZI collection units have been quoted to cost \$12,999 per machine, plus \$4,500 per machine for the addition of the card reader for a total of \$17,499 per machine. Please see Appendix C for full quote.

Maintenance costs will be roughly \$100 per machine per year. Dining Services will cover this annual cost. Each OZZI requires ethernet access. There is an \$80 fee for activating ethernet in the Dining Halls. This cost would be covered by Dining Services. When the OZZI collection unit was installed in West End Market, it took dining hall staff less than 30 minutes. Because of this, labor costs are not factored in with this RFP (Carver, 2014).

The retrofit of the three current Ozzi collection unit with Hokie Passport Swiping mechanisms is quoted at \$4500 per machine for a total of \$13,500. Please see Appendix C for full quote.

**Total cost:**

New Machines with Card Reader:  $(\$12,999 + \$4,500 = 17,499.00 \times 4) = \$69,996$

Card Reader Retrofit for current machines:  $(\$4500 \times 3) = \$13,500$

**Total Cost: \$83,496**

**D. Will your proposal produce cost savings for the University? If so, how much? Please describe in adequate detail the basis for your savings estimate.**

The data below uses current averages for Fall 2014 and Fall 2015. It was supplied from Virginia Tech's Dining Service's Sustainability Coordinator, Rial Carver.

During Fall 2014, the average use of reusable to-go containers compared to all to-go meals at West End Market equaled 1.1%. Between Fall 2014 and Fall 2015, there was an addition of two more Ozzi collection units as well as free containers for all on-campus students. Now in the first 8 weeks of the Fall 2015 semester, across the three units participating in the Reusable To-Go container program, an weekly average of 13.1% of all to-go transactions at participating units are being served in Reusable To-Go containers.

Dining Services hopes to make the Reusable To-Go container program free starting in the 2016-17 school year. To do this, there will need to be more collection units for the Reusable To-Go containers, and all collection units will need to be linked to the Hokie Passport system.

The free program, in addition to converting current collection systems to be compatible with the Hokie Passport and adding 4 more machines, should increase to 37.1% or higher usage. This estimate is found by doubling the percent increase from Fall 2014 to Fall 2015 due to double the reusable to-go container collection units being added. This is a significant underestimate, for the further addition of the free program and Hokie Passport upgrade should increase the usage even more. In fact, as seen the figure below, deduced from a survey of 344 students, at least 68.5% of the population would use the program and an increase will occur with the addition of Hokie Passport swipes.

If participation in the Reusable To-Go container program increases from 13% of To-Go meals to 37% of To-Go meals, assuming the same number of total to-go meals, an anticipated 8500 meals per week would be served in a reusable to-go container. That would lead us to be on track for 272,000 reusable meals served per school year (assuming 32 weeks). In turn, that means that 272,000 fewer compostable to-go containers would need to be purchased. At \$0.17 each, that indicates a savings of \$46,294 just on containers. In addition there is a cost savings associated with handling less waste. According to the cost savings calculations in Appendix B, cost savings from not having to pay for disposal of compostable to-go containers would equal \$870.

In one year, the savings would total **\$47,164**. Over 5 years, this would result in a **cost savings of \$235,820**.

**Do you use the Reusable To-Go container program?**

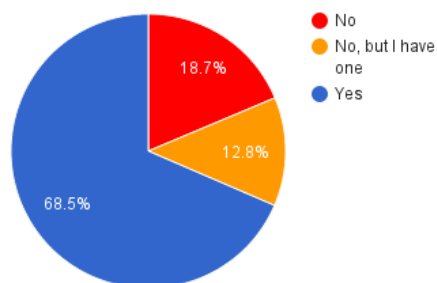


Figure 15

**Would you be more likely to use the Reusable To Go Program if the Ozzi Machines were linked to Hokie Passports (instead of using tokens)?**

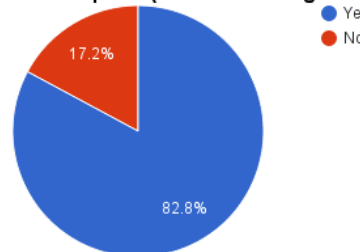


Figure 16

Is this funding request an Ongoing or One-Time change (please check one)?

One-time

Ongoing

E. Is funding available for this request from another source? If yes, describe the funding (source, amount, etc.)

While there is no funding available for this request from another source, the success of this request will be greatly increased with the funding of the Green RFP being put forward by VT Student Government Association to make the Reusable To-Go Program free for all students.

## SUSTAINABILITY INITIATIVES BY STUDENT ORGANIZATIONS FUNDING PROPOSAL

### Part IV- Requestors/Reviewers

Prepared By (Name of Contact for Student Organization)

Date

*William Hess*

11/11/2015

Reviewed By (Name of Appropriate University Official)

Date

Reviewed By (Name of Office of Energy and Sustainability Representative)

Date



## Appendix A: Data

The following numbers and estimates were provided by Rial Carver.

Table A.1

Tuesday	9/29/15				Wednesday	9/30/15			
Item	WEM	Owens	Turner	total	Item	WEM	Owens	Turner	total
9x9 Comp	1246	1410	844	3500	9x9 Comp	1270	1823	766	3859
GTG	6	3	1	10	GTG	2	1	2	5
RTG	257	214	33	504	RTG	232	218	43	493
Total TG	1509	1627	878	4014	Total TG	1504	2042	811	4357
Total RTG	263	217	34	514	Total RTG	234	219	45	498
RTG%	17.4%	13.3%	3.9%	12.8%	RTG%	15.6%	10.7%	5.5%	11.4%

Tuesday	10/6/15				Wednesday	10/7/15			
Item	WEM	Owens	Turner	total	Item	WEM	Owens	Turner	total
9x9 Comp	1411	1495	776	3682	9x9 Comp	1332	1572	828	3732
GTG	3	2	3	8	GTG	7	2	2	11
RTG	213	224	62	499	RTG	288	215	61	564
Total TG	1627	1721	841	4189	Total TG	1627	1789	891	4307
Total RTG	216	226	65	507	Total RTG	295	217	63	575
RTG%	13.3%	13.1%	7.7%	12.1%	RTG%	18.1%	12.1%	7.1%	13.4%

### Reusable To-Go Weekly Percentage Calculation

Fall 2014 RTG Average Weekly Percentage: 1.1%

Fall 2015 RTG Average Weekly Percentage: 13.1%

### Waste Costs:

Landfill: \$53/ton of waste, \$222.83/month for compactor rental, \$65.91/week for pull fee.

With an average of 20 tons of landfill waste per week from all of Dining Services, we can assume a cost of about \$1540 per month.

Compost: \$40/ton of compost, \$150 hauling/week, \$300/week for 3 weekly pickups from the unit.

## Appendix B: Calculations

Percentage Increase between Fall 2014 and Fall 2015 after addition of 2 Ozzi collection units, and free containers for all on campus students: 12%

Estimated Percentage Increase between Fall 2015 and Fall 2016 after addition of 4 Ozzi collection units, free containers for all students, and increased education: 24%

Estimated Fall 2016 Average Weekly Percentage, based on percentage increases from Fall 2014 to Fall 2015: 37.1%

### Current Cost of Compostable To-Go Containers Calculation

Using the Fall 2015 RTG Average Weekly Percentage of 13.1% RTG usage, 86.9% of To-Go Transactions are single use containers ending up in either landfill or composting:

An average of 23,000 To-Go transactions are made every week during Fall 2015.

Additionally, the costs of Landfill and Composting at Virginia Tech are provided below:

### Savings Calculation

Part 1: Cost savings associated with using fewer disposable containers:

If participation in the Reusable To-Go container program increases from 13% of all to-go meals to 37% of to-go meals, assuming the same number of total to-go meals, an anticipated 8500 meals per week would be served in a reusable to-go container.. That would lead us to be on track for 272,320 reusable meals served per school year (assuming 32 weeks). In turn, that means that 272,320 fewer compostable to-go containers would need to be purchased. At \$0.17 each, that indicates a savings of \$46,294 just on containers.

**Part 2: Cost Savings associated with waste handling:**

Based on the amount on compostable containers that will not be used, we can estimate the waste savings. Each case of compostable containers weighs about 32 lbs and includes 200 containers. If we anticipate a reduction of 272,320 compostable containers being used, that would equal at least \$871. There are pickup and hauling costs for composting that have not been included in the calculation below.

272,320 containers/ 200 per case = 1,362 cases  
 1,362 cases \* 32 lbs = 43,571 lbs  
 43,671 lbs/2000 = 21.8 tons  
 21.8 tons \* \$40 per ton = **\$871**

**Total Cost Savings:** Part 1 + Part 2 = \$46,294 + \$871 = **\$47,165** in one year.

**Appendix C: Reusable To-Go Container Collection Unit Quote**

This quote shows the cost for 1 OZZI collection unit with card reader as well as the cost for each retrofit card reader.



**AGreenOzzi, LLC**  
**PO Box 815**  
**Greenville, RI 02828**  
 Phone: 855-GRN-OZZI (855-476-6994)  
 Website: agreenozzi.com

**Quote**

Date	Estimate #
11/3/2015	2015-0283

"Changing the world from disposable to reusable one meal at a time."

Customer
ACCT VPCC-480-1-R Virginia Tech 109 New Hall West Blacksburg, VA 24061-0312

Description	Qty	Price	Total
OZZI 480 System	1	12,999.00	12,999.00
Card Scan Reader Upgrade for New Machine	1	4,500.00	4,500.00
Card Scan Readers for OZZI Systems already on site	3	4,500.00	13,500.00
Shipping and Handling		425.00	425.00
NOTE: Please note that Card Scan Reader price includes all hardware and necessary assistance on programming and connection to machines.			
Please contact Sue Mariani at 401-744-5213 or smariani@agreenozzi.com with any questions.		<b>Total</b>	<b>\$31,424.00</b>

**Appendix D: References**

1. Virginia Tech Dining Services Sustainability Coordinator, Rial Carver
2. Information and formatting adapted from previous 2014 proposal titled "Ozzi Machines for Reusable To-Go", available at [http://www.facilities.vt.edu/docs/sust/2015/OZZE\\_MachinesForReusableTo-Go.pdf](http://www.facilities.vt.edu/docs/sust/2015/OZZE_MachinesForReusableTo-Go.pdf)
3. "Waste and Recycling." Waste & Recycling: Living Sustainably: Indiana University Bloomington. Indiana University, n.d. Web. 03 Oct. 2014.
4. "Municipal Solid Waste (MSW) in the United States: Facts and Figures." EPA. Environmental Protection Agency, 2012. Web. 01 Oct. 2014.
5. DGGT. "Toolkit Landfill Technology: Environmental Risks." Pp. 1-16. Web. 2009.