REDUCING WASTE

Reducing Waste at the Pav

Global Sustainability, Spring 2013

Prof. Phoebe Crisman

Workshop Leader: Brianne Doak

Team members: Cara Bottorff, Annesley Berndt, Patrick Schuler, Richard Henry, Scott MacGregor

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ABSTRACT

The Pav is a popular dining location on grounds comprised of multiple vendors. This location has huge untapped potential to become more sustainable. The Pav does not have composting, and only a few recycling bins which are poorly marked and poorly placed. The goal of our group was to attack the issue of sustainability at the Pav from three angles to find ways that it could be vastly improved. We approached our project by first creating better signage to place above waste bins to improve correct usage. We then graphed out the Pav to find the best location for new, better marked waste bins. Lastly, we looked at each food vendor in the Pav separately. We observed how sustainable they currently are based upon what sustainable materials they are using and we offered substitutes for unsustainable materials currently in use. If all of these measures are implemented, the Pav would have more sustainable materials that would be disposed of in the proper receptacle (trash, recycling, composting) that are clearly marked to help consumers utilize them. Our three phases are crucial to the Pav's long-term sustainability and we implore management to seriously consider making these changes to ensure future viability.

INTRODUCTION

The goal of our project is to help better manage waste at a dining location on grounds: the Pav. The Pav is unique because it houses a variety of independent food vendors. This is a very popular location for students and others on grounds to dine. Making changes here would create large impacts felt school wide. We worked with UVA Green Dining and Chris Stevens, the Aramark Sustainability Manager. First, the Pav has poor signage to indicate proper receptacles for trash. The Pav also is not set up well to facilitate students using the correct bins. The materials used in the Pav could also be improved. We have devised a thorough plan for increasing sustainability at the Pav that can be implemented without excessive effort in the future.

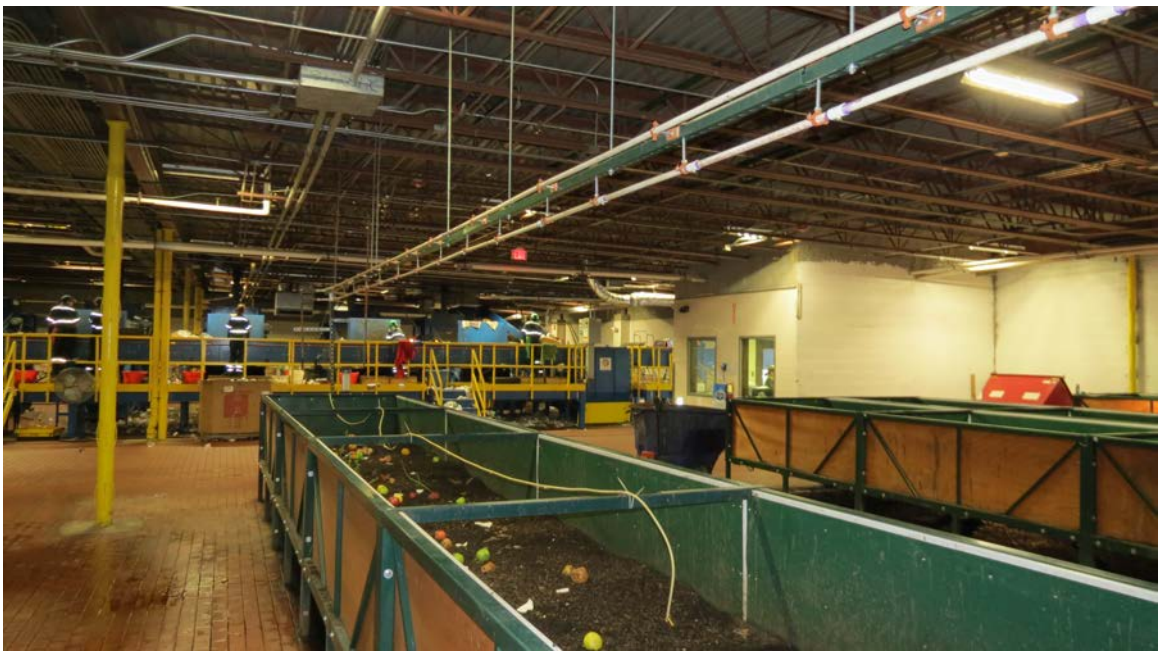
Our group's objective was to come up with a way in which the Pav can better manage its waste. We approached this in three phases: signage, waste disposal, and materials. For signage, our goal was to create something that would be easily read, comprehendible and would educate the customers of the Pav. Signage is our first phase because it can be implemented now and can begin improving the waste stream immediately. For waste disposal, we looked closely at the layout of the PAV and the current receptacles in place. We have researched and plotted the design of the Pav to find the most appropriate, accessible places for a waste station. Through this research we discovered where a new waste station could be implemented that complied with the Pav's rules (fire code) while making people more able and likely to dispose of waste in new clearly marked bins. For materials, we cataloged all materials used to serve food at the Pav and their relative sustainable properties (recyclable, compostable). We offer suggestions for substitutes that can be used for materials that are not sustainable. With all of these measures in place, waste could be immensely reduced at the Pav. The following is a comprehensive plan for the Pav that is the product of our research.

PRECEDENTS

We used Observatory Hill and Newcomb's composting program as a precedent that could be implemented in the Pav. We will try to implement item specific bins to increase recycling and composting. Newcomb and Ohill have implemented composting programs very successfully, however the Pav has yet to do so. It would be easier for the Pav to begin composting now that there are such good examples to follow. By implementing these, we can divert mass amounts of waste that would otherwise go straight into the trash to be reused.

At Charlotte Douglas International Airport, one and a half million red wiggler worms are being used to compost materials from the airport. They have reduced the airport's trash going to landfills by about seventy percent. Only fifteen workers are needed to sort through the airport's trash; this small group is able to sort out recyclable materials like aluminum and plastics to be sold, and then send the rest of the organic

material to be eaten by the worms. The recyclable materials that are sold have been very lucrative for the airport with aluminum selling for $1,100 to $2,000/ton. The material produced by the worms can be used as soil across 6,000 acres of the airport. This saves them tons of money on fertilizer. This applies to UVA directly because there are so many gardens around grounds on which the material could be used, thus saving University from excess expenditures. The estimated cost of trash disposal before the recycling center was built was $900,000. With the recycling center costs have dropped to only $425,000. The $1.1 million dollar recycling center is expected to pay for itself within only five years. Although this idea is not the norm, it has been an incredible success story. It is innovative and creates huge benefits.



Understandably, a model like this would be very hard to implement here at UVA, a similar model provides countless potential benefits. All waste from around the school could go to a recycling center like this one. The facility would only need to employ several people and could generate profits from selling recycled materials and creating fertilizers. The center could also be used as an interactive classroom for environmental science as well as many other areas of study.

BODY

Phase 1: Signage- Educating the Customers of the PAV

During our extensive observational studies, our group noticed that the largest hindrance to the PAV becoming a “green” dining option on grounds was that people were not using the recycling bins scattered throughout the seating area. Currently, the main area to dispose of waste is centered around a large white column on which sit three trashcans and one recycling bin for plastic and metal containers. There is no signage to notify the customers as to which receptacle is appropriate for their waste. We observed that people eating at the PAV threw their waste in the receptacle that was most convenient for them. If the three sides of the column with trashcans were more readily available to the individual than the side with a multi-purpose recycling bin, they chose the sides with the trashcan. Unfortunately, while we were conducting our study, even one of our group members fell victim to this tendency. As we were wrapping up, he walked over to the column and without thinking, threw a plastic drink bottle away in the trashcan closest to him. After laughing at the huge mistake he made, we analyzed why he did that. One of the main reasons was that he

didn't even realize that there was a recycling bin on the opposite side of the column. Like him, most people aren't even thinking about where they are disposing of recyclable and/or compostable products. The first step to ending that unsustainable behavior is removing that ignorance through signage.

Using precedents from other Universities such as Cornell and Harvard (pictured above), we realized one of the most effective ways to ensure that waste was being properly disposed of was to ensure that there was attention-grabbing signage by each receptacle to let the consumer know what needed to go in each specific bin. At these schools noted for their exceptional green dining options, all bins were clearly marked with large, bright signs that contained images and descriptions of which pieces of waste belonged in each container. We are considering this as the first phase of our project because it is something that the PAV can implement immediately. They don't need to make any significant investment and it will have instant impact of the behavior of their patrons. First, we recommend that the PAV install signage above the bins as they are currently set up to ensure that recyclable materials are being properly disposed of. Later, once our proposed waste center is a more immediate possibility, we recommend that the PAV implement a more thorough system of signs that denotes the proper bins for trash, composting and recycling.

The first part of our signage recommendation is nearly effortless and can be implemented immediately. Much like those at Harvard University, we have designed signs to go above the trashcans and recycling bins as they are currently situated. We believe that these signs will alert the PAV's patrons that there are alternatives to trashcans in the PAV, and will prevent the mindless disposal of recyclable products into trashcans. This will dramatically increase the percentage of the PAV's waste that is recycled. Each sign uses large, bold lettering and stark colors to grab the patron's attention as they approach the waste receptacles. We used blue signs for recycling, and black signs for trash in accordance with the generally accepted norms for receptacles in the waste treatment industry (attached below). The signs are clearly labeled (TRASH for trashcans, RECYCLING for plastic and metal container disposal) and contain a list of what should and should not be placed in each receptacle.

There are very few restrictions to this piece of our proposal. The first is that the signs are only allowed directly above trash receptacles. While we would like to include signage that points patrons to the proper disposal area as they leave their seats, we believe that our designs will adequately address the issue of mindless waste disposal. The only other main issue is that we are not allowed to put pictures of the actual products sold at the PAV. While we were not allowed to put specific images of the actual items that should be placed in each receptacle, the list of items is detailed enough so that patrons will be able to easily determine which bin their waste belongs in. The lists ensure that the consumer will not foolishly dispose of a plastic drinking bottle in a trashcan because it is clearly noted that they do not belong in that particular receptacle.

We have also noted which of the items that now belong in trashcans could be composted with proper facilities. This will lead in well to our proposed waste center and eventual composting at the PAV. These lists are very thorough and alert the consumer to the wide variety of waste from the PAV that is in fact recyclable. For example, very few patrons are aware that the sushi containers, yogurt cups, and milkshake containers sold at the PAV are recyclable. In addition to grabbing the consumer's attention and preventing mindless waste disposal, the signs serve to expand the variety of waste that is recycled at the PAV. The signs for immediate use merely harness the sustainable qualities already existent at the PAV and increase their effectiveness.

The steps toward implementation and installation of these signs have already started. After thoroughly discussing what Aramark's expectations were with Sustainability Manager Chris Stevens, we are now in the process of getting the signs approved by Mr. Stevens and Aramark Marketing manager for UVA Dining, Nicole Jackson. Chris and Nicole have explained that they would be eager to install waste signage in the PAV so long as it is professionally printed, can be secured by hidden adhesives (double-sided tape, tacks, etc), fits the post parameters, contains the UVA Dining logo, and they approve the content. As we put the finishing touches on the signs, we believe the signs match all the parameters and we are in the process of sending them to Chris and Nicole, pending their approval. Once accepted, we hope to have the signs installed by the end of the semester.

As for our proposed Waste Center- if Aramark officials eventually accept it- there would need to be some slight tweaks to the aforementioned signs. We have also designed signs for our Waste Center, adding a green sign for Composting, and rearranging some of the items on the other signs based on the added receptacle. Our precedents of Harvard and Cornell already had composting services in place, so once again we modeled our signs after their designs. Like the Trash and Recycling signs, we stayed with the accepted standard in the waste treatment industry and made the signs green for Composting. The main difference on the other signs (see attached on page 16-20) is that all food waste and compostable containers no longer belong in the trashcan. The list of items that belong in the trash is dramatically reduced, moving the PAV one step closer to being a completely green dining venue. The list of recyclable items remains unchanged, as none of them are compostable.

Each sign would be placed above its corresponding bin in the new Waste Center. The Center removes the problem of patrons merely traveling to the nearest bin to discard their waste and provides a centralized location for all types of receptacles. The signage in the Waste Center would grab the patron's attention when they are disposing of their waste and would ensure that every item made it into the appropriate receptacle, whether it is TRASH, RECYCLING, or COMPOST. The Waste Center would ultimately fail without this type of descriptive signage. Without something to alert them of where a certain item should be disposed, patrons would incorrectly use the station, which would defeat its ultimate purpose. Signage in our proposed Waste Center educates the consumer and forms habits of mindful waste disposal that will help the PAV become the most sustainable dining option on grounds.

TRASH

LEFTOVER FOOD WASTE

STRAWS

SAUCE PACKETS

WRAPPERS

- Chips, Cookies, Candy
- Chopsticks
- Burrito & French fry Boxes
- Ice cream
- Foil (sandwich/burrito)
- Pizza Plates & Boxes

CUPS & LIDS

HERE

University of Virginia DINING
Creating Delicious Relationships

Green Dining at UVA

RECYCLING

PLASTIC

- Bottles
- Lids from soda station
- Sushi containers
- Sushi dipping cups/lids
- Salad containers
- Fruit containers
- Yogurt cups
- Milkshake cups

GLASS BOTTLES

ALUMINUM CANS

HERE

University of Virginia DINING
Creating Delicious Relationships

Green Dining at UVA

TRASH

STRAWS

SAUCE PACKETS

WRAPPERS

- Chips
- Cookies
- Candy
- Ice cream
- Foil (sandwich/burrito)
- French fry boxes

CUPS

- All except Freshens

HERE

University of Virginia DINING
Creating Delicious Relationships

Green Dining at UVA

RECYCLING

PLASTIC

- Bottles
- Lids from soda station
- Sushi containers
- Sushi dipping cups/lids
- Salad containers
- Fruit containers
- Yogurt cups
- Milkshake cups

GLASS BOTTLES

ALUMINUM CANS

HERE

University of Virginia DINING
Creating Delicious Relationships

Green Dining at UVA

COMPOST

LEFTOVER FOOD WASTE

Freshens CUPS & LIDS

CHOPSTICKS

PAPER WRAPPERS

- From straws
- From chopsticks

BURRITO BOXES

PIZZA PLATES/BOXES

HERE

University of Virginia DINING
Creating Delicious Relationships

Green Dining at UVA

Phase 2: Waste Disposal

The beautiful renovations of the Pav have left UVA students with a tremendous place to eat, boasting a variety of food options arranged in a convenient and aesthetically pleasing manner. One of the biggest flaws that our group's observation yielded however was the collection of waste receptacles scattered throughout the dining area. There appeared to have been little planning regarding the placement of trash and recycle bins, but how often does one think in length about where to put such things? In an effort to promote sustainability, a tactical arrangement of trash and recycling bins must me implemented in order to better allow students to dispose of materials correctly.

Currently there is no logic to the placement of the bins. The PAV has two main exits, each of which deserves equal attention. People leaving the dining area will be looking for a convenient way to dispose of their waste.

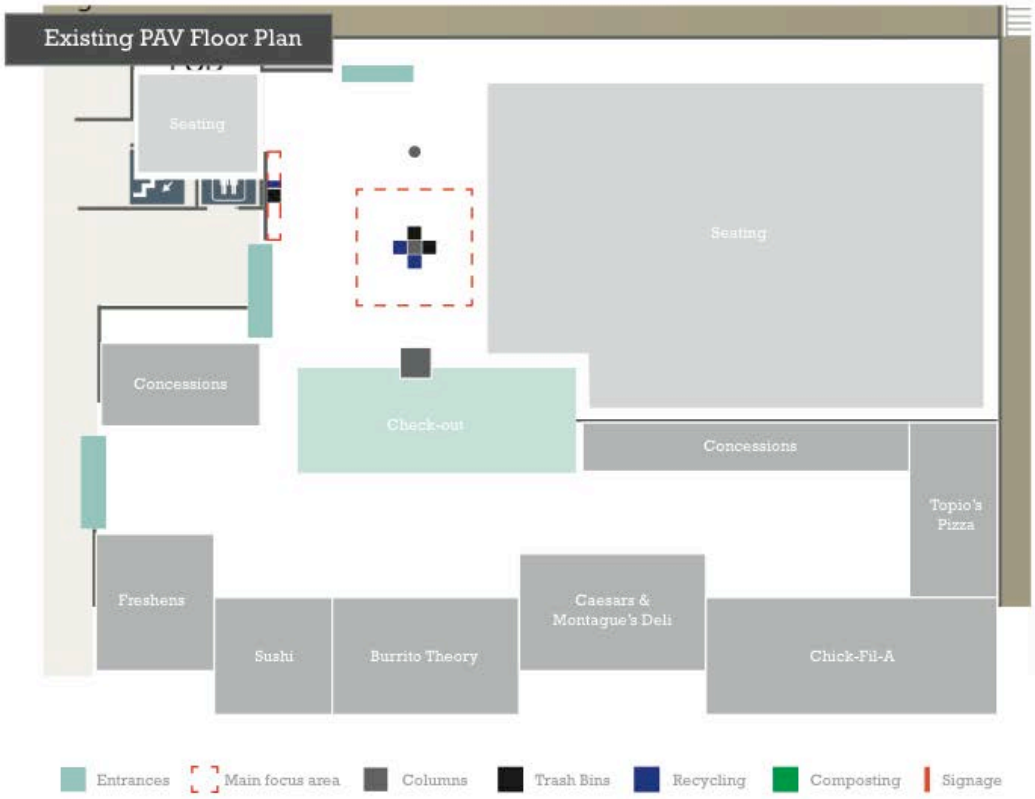
Although there are fire code regulations to take into consideration, it is necessary to have a central waste station at the column behind the cash registers. This is a very visible area, central to the PAV and would serve well as a waste station. This waste station would center traffic from the garbage and recyclables alike, forcing customers to make a conscious decision about where their waste goes. Also, in order to catch the people leaving from the peripherals of the PAV's dining area, there needs to be a smaller set of bins at the walls next to the two exits. The central station would facilitate recycling in a way that the random trashcans and out-of-the-way recycle bins scattered throughout the rest of the PAV formerly hindered.

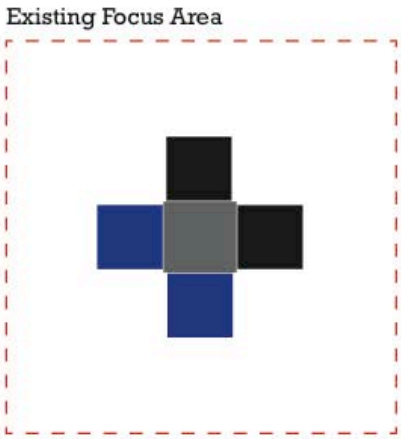
It is also necessary to address how these receptacles look. The bins currently vary in no logical manner in regards to size, shape and color. New designated trashcans will be black (or be of a distinct, possibly wood paneled design in accordance to the PAV's décor) and clearly marked "TRASH", while the new recycling bins will be the universal color of blue and clearly marked "RECYCLE". As for the recycling, we cannot limit (as is the case now) it to just plastic and glass recycling, but rather we must have a bin that accepts all types.

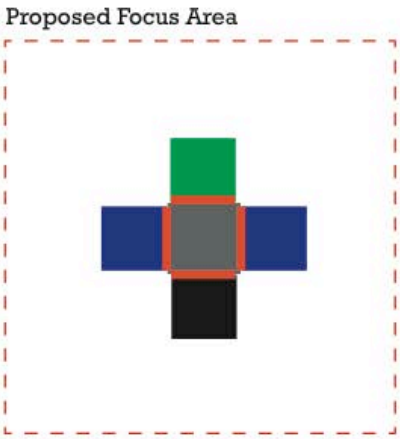
Unfortunately today it is hard to force people to dispose of their waste in a sustainable manner when it is not outwardly convenient. Implementing a system in which it is no harder to recycle than to trash waste is a step in the right direction.

We have added to the floor plan a depiction of where a waste station should be added and which bins it should contain. The three bin waste station would cost $413.14 (pictured to the left). It consists of a trash,

recycling, and composting bin. The bins are made of 100% recycled polypropylene plastic and have a unique lid-lock feature. The lid-lock hides the bag and keeps the receptacles looking clean. The side panels are customizable with our own design or with standard panels. The four display panel sides consist of two large panels (17-3/16”W x 26-3/8”H) and two small panels (9.3”W x 26- 3/8”H). We believe this would fit in well with the clean look of the Pav.







Phase 3: Materials- Current Product Offerings and Suggestions for Increased Sustainability

Our team recommends that Aramark supply the Pav with more compostable and recyclable serving materials (i.e. biodegradable straws, cups, containers, etc.). Below, we have outlined Aramark's current offerings and provided the economic and environmental justification for providing more ecologically sustainable products.

Currently, the Pav and its vendors offer various items that must be thrown in the trash when there are viable biodegradable alternatives. Below, we will outline a few sustainable options that can decrease Aramark's carbon footprint, but may also increase costs. Nevertheless, we believe Aramark, ranked #18 on Forbes "Best Private Companies" List in 2011, understands the importance of a great reputation as it relates to keeping and gaining new customer contracts. Moreover, if Aramark adopts the suggestions we have outlined below, we firmly believe the benefits of Aramark being able to market its increased sustainable practices and social conscious to prospective and current customers will far outweigh any increased cost.

(1) At the smoothie provider, Freshens, and around the Pepsi soda machine, Aramark provides wrapped straws that must be thrown away. However, a more sustainable option would be switching to 100% compostable straws offered by Earth Straws, a bulk home and retail provider. While our group estimates that the Earth Straws would be 13% (or $0.0006 per straw) more expensive than the generic unsustainable type, if offered as unwrapped straws in large dispensers instead of individually wrapped straws, Aramark could limit its increased costs. **(2)** We believe Aramark should replace the cups used around the Pepsi machine with World Centric's biodegradable cups derived from plants grown in the USA; however, it is important to note that we project this to be a 77% (or $.05) increase in cost over current product offerings. **(3)** Currently, the Pav wraps its cookies in cellophane, which is not recyclable (because it is contaminated with food) or compostable. However, Cellobags.com offers 100% compostable bags, which would only be 16% (or $.004) more expensive than generic cellophane bags. **(4)** We believe Aramark could increase its brand loyalty and customer satisfaction if it considers entering into a relationship with Sun Chips, which offer 100% compostable bags, instead of the providers of Doritos and Lays chips. **(5)** Other individual vendors can help: Sushi could offer soy sauce in small compostable containers (dispensed from a large tub) instead of individually wrapped products and Burrito Theory could wrap its burritos in 100% recycled aluminum foil which uses 5% less energy than traditional aluminum foil in the manufacturing process.

After analyzing areas for improvement, it is worth noting that Aramark offers a few sustainable packing materials at the Pav. For example, the Aramark offers Ecotainer lids, which are 100% compostable and made from post-consumer material. Our group believes that product offerings like the Ecotainer lids prove that Aramark will be receptive to our recommendations for sustainable change.

Current PAV Inventory	
Freshens	
Compostable	Cups and Lids are 100% compostable (also, made from post-consumer material)
Recyclable	Straw Wrappers
Trash	Straws
Sushi	
Compostable	Food, Chopsticks and Wrappers
Recyclable	Plastic Tops/Bottoms of Containers and Dipping Sauce Cups
Trash	Sauce Packets
Drink/Snack Area	
Compostable	Ecotainer lids
Recyclable	Glass Bottles, Plastic Bottles, Cans, and Plastic Lids
Trash	Ice Cream, Chip Bags, Candy, Cookie Wrapers and Cups
Burrito Theory	
Compostable	Food and and Boxes
Recyclable	
Trash	Foil Sheets
Montague's Deli	
Compostable	Food
Recyclable	Salad Containers and Lids, Paper for Sandwiches (maybe compostable)
Trash	Chip Bags and Cookie Wrappers
Chick fil-A	
Compostable	Food
Recyclable	Nothing
Trash	Everything
Topio's Pizza	
Compostable	Food, Plates, and Cardboard Boxes
Recyclable	Salad Containers
Trash	
Refrigerators/Utensils	
Compostable	Ecotainer Lids
Recyclable	Fruit Containers, Bottles, F'real Milkshakes, Plastic Lids, Straw Wrappers
Trash	Straws and Cups

ALTERNATIVES/PRICE ESTIMATES

Freshens

ALTERNATIVE: Consider switching to 100% compostable straws (see price comparison below)

Current Price (est)	Sustainable Price (est)		Price Increase	% Increase
$ 0.0046	$ 0.0052	Per Straw	$ 0.0006	13%

Sushi

ALTERNATIVE: No compostable alternative to soy sauce packets; however, could consider self-serve bulk soy sauce buckets dispensed into individual compostable containers

Drink/Snack Area

ALTERNATIVES:(1) Replace Dortios/other chips w/ SunChips - 100% compostable bags (2) 100% compostable Cookie Bags

Current Price (est)	Sustainable Price (est)		Price Increase	% Increase
$ 0.025	$ 0.029	Per Bag	$ 0.004	16%

Burrito Theory

ALTERNATIVE: No biodegrdable foil; however, aluminum foil is recyclable, but has to be throughly cleaned to avoid food contamination (could think about buying 100 percent recycled aluminum foil supporting a process that uses five percent less energy than the traditional aluminum foil manufacturing process)

Montague's Deli

ALTERNATIVES: see Drink/Snack Area for Chip Bags and Cookie Wrappers (above)

Chick fil-A

ALTERNATIVES: Adopt compostable sandwich packaging, fries containers and cups

Topio's Pizza

ALTERNATIVES: None, looks good

Refrigerators/Utensils

ALTERNATIVES: see Freshens sections (straws) - Cups below:

Current Price (est)	Sustainable Price (est)		Price Increase	% Increase
$ 0.06	$ 0.11	Per Cup	$ 0.05	77%

Other Options:

One of the options we considered was combining PAV composting with composting from Newcomb dining hall where it is already in place. However, Chris Stevens told us that that was not possible due to logistics. The loading dock that is used is shared by all operations at Newcomb so it would be hard to obtain space for composting for the PAV. The loading dock would have to be completely reconfigured in cooperation with the Dining services, University services, and other groups in Newcomb to create space for PAV composting bins. Due to this logistical nightmare, a program for the PAV alone would probably be the most likely to be implemented.

CONCLUSION

We have created a thorough plan that could be implemented at the PAV to seriously reduce waste. We have an inventory of current materials that are used effectively categorizing each as compostable,

recyclable, or trash. We found alternatives to all trash, so that the PAV could divert all waste from its trash stream into sustainable options like composting or recycling. We have also graphed out the floor plan of the PAV and plotted where waste stations could be most usefully placed. We researched waste bins to find their exact cost with alternatives. With our research it is clear that the PAV could greatly benefit from reworking their waste stations. We found that most materials were reusable in the PAV and of those that weren't, all could be switched to alternatives that were. With all of these reusable materials, the PAV should implement new formations of waste stations that would prompt the recycling and composting of these materials. We used charts and graphs to document our work and assessed it using cost analysis for alternatives to what is currently in place at the PAV.

We still face some barriers at the PAV. Most importantly the PAV does not have composting established at its locations now. Funding for bins and more expensive sustainable material alternatives is also necessary for the changes to be made in the PAV.

FUTURE WORK

There is still much to be done. We would like to see composting institutionalized at the PAV. Chris Stevens has been working on laying the groundwork for this change and will continue to work toward this change. Hopefully our research can help him move forward with this initiative. We hope to see environmental groups like Green Grounds and Sustainability Advocates on grounds take up the cause of the PAV and pressure them to make the changes we have suggested. It would be great if the sustainability-oriented groups on grounds would help raise the money necessary for these changes. Ohill, Runk, and Newcomb Dining locations already have composting programs established. We hope that the PAV can follow in their footsteps. The option of a composting center like that of Charlotte Airport should also be considered, or at least several aspects should be examined and employed. This is an innovative technology that could be extremely beneficial to the University at large.

LESSONS LEARNED

Our group learned that there were many more barriers to advocate for change than we had expected. We initially wanted to evaluate the sustainability of the food each vendor used but that was not possible. The locations would not tell us about their back-of-house operations so we could not evaluate the food aspect. This led us to change our goal to focusing on the materials they used instead. Here we again ran into barriers. Many of the materials were not labeled at all to designate them as compostable, recyclable, or trash. We then solved this issue by researching the materials to find out what category they fell into. Our next challenge was graphing the PAV floor plan. We thought that we would be able to find the floor plan for the PAV from the university website, in a library, or online. We could not find it anywhere. To overcome this obstacle we took many pictures and then one of our team members, an architecture student, was able to recreate a graphic floor plan. Another issue was finding the correct dimensions for waste bins so that we could plot them on the graph appropriately. We thought that there would be a standard bin size the university used, but there is no such standard. We researched bins and found options that would fit from reputable websites instead. Another issue we had was trying to figure out the fire code. Chris Stevens warned us that there were many fire code restrictions in the PAV that we had to be aware of when planning where bins and signage should be placed. We attempted to find information about the fire code from no fewer than five sources yet had no luck. Because it was so hard to access, we had to go off of more "rule of thumb" knowledge in this field- for example do not cover an outlet- than a real written code.

Due to the initial challenges, we had to change our focus from food waste to material use, but we were able to analyze that effectively. We were able to provide the options and future plan for the PAV that we had aimed to create. We were not able to figure out how composting could be implemented at the PAV immediately, but we were able to provide options of ways to do so for the future. We learned that creating change involved many more parties than expected. We also found that information, like the floor plans, was

a lot harder to obtain and we needed much more authority than we possessed to acquire it. If we were to do it again, we would do a waste audit at the very beginning. This would be helpful to know more about what would be the most appropriates size of waste center and its component bins.

APPENDICES

Bibliography

"10 Disturbing Facts On How Much We Waste." *Planet Forward: Committed to Living a Sustainable Lifestyle*. N.p., 24 Oct. 2009. Web. 30 Apr. 2013. <https://planetforward.ca/blog/10-disturbing-facts-on-how-much-we-waste/reduce-your-waste/>.

"About the Campaign." *Think Eat Save: Reduce Your Footprint*. N.p., n.d. Web. <http://www.thinkeatsave.org/index.php/about>.

"Composting Signage and Posters." *Harvard School of Public Health*. Ecoopportunity, n.d. Web. 5 Apr. 2013. <http://www.hsph.harvard.edu/ecoopportunity/composting-signage/>.

Portillo, Ely. "Worm's Munching on Travelers' Trash at Charlotte Airport." *Charlotteobserver*. N.p., 2 Nov. 2012. Web. 3 Mar. 2013. <http://www.charlotteobserver.com/2012/11/01/3637568/worms-munching-on-travelers-trash.html>.

"Protecting the Earth's Resources for Future Generations." *Aramark: Environmental Stewardship*. N.p., n.d. Web. <http://www.aramarkhighered.com/social-responsibility/environment.aspx>.

"Recycling Containers and Recycle Bins for Office." *Recycle Away: Systems & Solutions*. N.p., n.d. Web. <http://www.recycleaway.com/recycle-containers-and-recycling-bins-for-office.html?gclid=CK7GpOzomrYCFYSe4AodJSMA8Q>.

Roser, Julie. "Millions of Worms Eat, Compost Charlotte Airport's Trash." *WFAE*. NPR, 11 Dec. 2012. Web. 3 Mar. 2013. <http://www.wfae.org/post/millions-worms-eat-compost-charlotte-airports-trash>.

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