

Zero-Waste Football

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Abstract

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The objective of our initiative is to reduce as the amount of waste traveling from Scott Stadium to the landfills by making Scott Stadium “zero-waste.” In order to do this, all products sold within Scott Stadium must be converted to compostable or recyclable products, eliminating trashcans and diverting virtually all waste produced at the stadium from the landfill.

Over the course of this semester, we investigated current waste management practices at UVA, formulated a design and plan for the initiative, and evaluated feasibility and funding for its implementation. We researched a project precedent, Ralphie’s Green Stampede at CU Boulder in order to aid us in achieving an effective design for a zero-waste football stadium. We then met with community partners in Athletics Facilities and Operations, UVa Dining, and UVa Sustainability in order to understand what steps and challenges accomplishing a zero-waste stadium would entail. We did online research of Eco-products and local composting opportunities, and then used the information gathered to formulate a comprehensive funding estimate and to analyze the benefits that could be achieved through our initiative.

We have developed a project design that will need further negotiation prior to implementation. We hope to continue meeting with our community partners in order to take action to make actual implementation possible for the fall or for the future.

Project Definition

Background/Purpose

Every home football game creates massive amounts of waste that are sent to the landfill. Over the course of the season, over 55,000 units of non-compostable non-recyclable packaging are sold to contain food items such as hot dogs, pizza, and wings. Not only will this approximately 3,000 lbs of packaging waste end up in the landfill, but so will all of the food waste that could easily be composted and used to the benefit of local farmers.

The constant use of disposable containers and packaging made of plastic constitutes an unsustainable practice, as a majority of the products are generated from fossil fuels. Additionally, plastics decompose very slowly, causing environmental degradation for generations to come. The United States generates 254 million tons of municipal solid waste every year (Thomson). Per capita, this is more than any other country. While garbage is not a highly visible environmental problem like climate change or soil erosion, its persistence and magnitude make it worthy of consideration and action. As a world leader in many aspects, the country should work to reduce the overall waste stream and recycle/compost a much larger portion of municipal solid waste.



The problem of waste at Scott Stadium is indicative of a much greater problem in American society: the “out-of-sight, out-of-mind” mentality about what happens to our waste. Even the trashcans that are directly adjacent to recycling bins at Scott Stadium are consistently filled with numerous bottles, cans, and other recyclables. A zero-waste stadium could help make all those who visit it mindful of the amount of trash they generate in their daily lives and the environmental degradation resulting from human activities. Additionally, we hope our project at Scott Stadium will influence individuals’ recycling habits. We hope that people will realize that if we can make an entire football stadium “zero-waste,” then it should be easy and desirable to make individual houses “zero-waste.” As a prominent university and academic community, UVa should play a leadership role in inspiring sustainable living through its own practices and public perception.

Objective

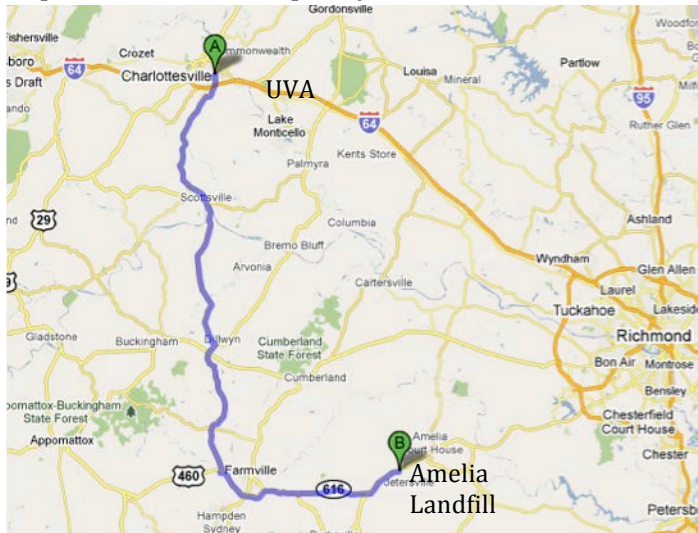
The objective of our project is to develop the framework for an initiative to make Scott Stadium “zero-waste.” The purpose of this initiative is ultimately to convert all products sold within Scott Stadium to compostable or recyclable products, thereby eliminating trashcans and diverting virtually all waste produced at the stadium from entering a landfill.

Key Stakeholders

Currently, 60-70% of the waste produced in Scott Stadium ends up in the Amelia Landfill. Landfills are associated with pollution risks to soil, air and water. Without intense maintenance and monitoring over prolonged periods of time,

landfills can leak highly contaminated leachate into the groundwater and release many potentially dangerous air pollutants, constituting a public safety threat. Because air, water, and land are resources of the commons, the entire population is affected by unnecessary waste disposal in landfills. Because most garbage lasts indefinitely and landfill capacity is finite, eventually more landfills will have to be built, affecting future generations.

Especially affected by current conditions are Central Virginia residents, who depend on landfill capacity for their waste needs, and people living near the Amelia



Landfill (85 miles Southeast of Charlottesville; services the UVA community) or those living along the transportation route who may have to cope an unfair burden of pollution. This trash must be transported such a distance (which constitutes another unsustainable practice by increasing emissions) because the Ivy Landfill in Albemarle County closed when it reached its capacity in 2001.

The people with the power to “make or break” this plan are the business leaders associated with Scott Stadium – namely Aramark, the company which runs the vendors who would need to switch to compostable/recyclable materials and the waste management companies who would need to be prepared to handle large amounts of recyclable and compostable materials.

University officials also would have to approve the plan. Interest from the student body could provide valuable support, and volunteer service to separate recyclables is needed if we strictly follow the CU Boulder model. Consequently, the Student Council’s support will be vital in carrying out this project. Specifically, we will solicit the help of the Environmental Sustainability Committee and Athletic Affairs Committee.

The “powerless,” or those who are impacted by the problem but can do nothing to affect it, are future generations who will have to live with our trash. Those who live near landfills (specifically those near the Amelia landfill) must bear the burden of air, water, and land pollution but are powerless to affect it.

Approach

Design alternatives considered:

| | | |
|--|---|---|
| <p>Design 1: Incorporate solar panels into the design of Scott Stadium in order to provide the stadium with a renewable source and reduce the carbon footprint. This would entail:</p> <ul style="list-style-type: none"> • Researching prices and types of solar panels for the stadium • Researching optimum location for the installation of solar panels <ul style="list-style-type: none"> ○ Consulting experts • Researching how to incorporate solar panels into the energy structure of the stadium <ul style="list-style-type: none"> ○ Contracting someone to do this work • Finding funding for solar panels | <p>Design 2: Start an initiative to make Scott Stadium “zero-waste” by making all products sold inside compostable or recyclable in order to divert the waste from the landfills. This would entail:</p> <ul style="list-style-type: none"> • Seeking support of the football program for help in our initiative • Working with vendors to eliminate products that produce non-compostable, non-recyclable waste • Working to get the resources (and human resources) needed for composting and finding places that could utilize the compost • Working with the facilities department for athletics to make changes in management • Convincing athletics to absorb the costs | <p>Design 3: Use extra fry-oil to make biofuel for the UTS buses. This would entail:</p> <ul style="list-style-type: none"> • Assessing the amount of fry-oil left after games • Studying the process of converting fry-oil to biofuel • Obtaining the resources (and funding for the resources) needed to convert fry-oil to biofuel • Studying the process of converting buses that run on diesel to be able to run on biofuel • Obtaining the resources (and funding for the resources) needed to convert buses to be able to run on biofuel • Test the process and conversion on one bus • Evaluate the success and extend the program as far as possible |
|--|---|---|

Optimal design choice:

The optimal design choice for achieving the goal of our project is Design 2: The Zero-Waste Initiative because it offers the most feasible opportunity to implement a substantial sustainable change. We have a reliable project precedent and other composting initiatives already in place at UVa.

Project Precedent

We are based our project design off of a very successful precedent set by Ralphie’s Green Stampede at CU Boulder. Ralphie’s Green Stampede is a zero-waste and carbon-emission reduction effort at Folsom Field in Boulder, Colorado. Folsom Field is of comparable size to Scott Stadium, seating 53,613 fans in comparison with Scott Stadium’s capacity of 61,500 fans. Ralphie’s Green Stampede includes a number of sustainability efforts including the conversion of extra fry-oil from the stadium into biofuel for CU’s bus fleet, the off-set of all electricity use through alumni purchases of carbon off-sets, and the elimination of trashcans as all the products sold within the stadium are recyclable or compostable. In our initiative we have chosen to focus only on the zero-waste efforts of recycling and composting, of which CU has thus far had great success.

The success of CU Boulder's initiative emanates from a cooperative effort of corporate sponsors¹, athletic facilities and management, and a vigorous student effort that we hope to mirror here at UVa. We chose to model our project off of Ralphie's Green Stampede because of CU's comparable resources and goals and the proven success of their project design. We have adapted our project design to meet the distinctive features of athletic operations and facilities management at UVa, and we have benefited greatly from having information and statistics from a precedent on which to base our proposal. Often one of the largest challenges in launching ambitious initiatives and changes is skepticism about feasibility; however, after CU's great success in not only zero-waste at their field but more, we are convinced of the feasibility of our own project and hope to build off of the example set by CU for standards of sustainability at university campuses across the nation.

Facts at a Glance:

Ralphie's Green Stampede

- In the first year, a 90% landfill diversion rate was achieved at Folsom Field
- Virtually all food and drink services have converted to compostable or recyclable materials and containers.
- Compostable products are purchased through Eco-Products, the same company we use for compostable dining products at UVa
- Any non-recyclable, non-compostable materials brought in are sorted out of recycling by students
- Expected to be low cost and save costs over time as compostable materials become less expensive

http://www.cubuffs.com/ViewArticle.dbml?DB_OEM_ID=600&ATCLID=1549812

Implementation

Developing the foundations of the initiative

- Our first major step was to develop healthy and mutually beneficial relations with our community partners and establish UVa interest in our proposal
 - We have established a relationship with Jason Bauman, the Associate Director of Athletics for Facilities and Operations and met with him regarding current recycling practices at Scott Stadium and spoke about what could be improved upon. He expressed interest in staying on board with our project, and he is on our e-mail threads with other community partners. We send him updates on our project and he referred us to other potential community partners at UVa. We plan to continue to meet with him to begin taking the steps necessary for implementation in the fall.
 - We met with Rodney Griffin, General Manager of Cavalier Concessions and Clothing and UVA Dining Services, on various occasions to discuss current products sold and feasibility of replacing these with compostable materials. We received confidential pricing information that we used to compile a cost estimate (see Table 1, Appendix A).
 - We met with Kendall Singleton, Sustainability Coordinator for UVA Dining Services, to discuss the operational aspect of composting. We learned of the permits necessary for composting and about the current composting practices in place.

¹ Horizon Organic, Silk, Land O' Lakes, Boulder Toyota-Scion, and Project C

- We met with Jessica Wegner, Environmental Projects Manager, to discuss the logistics and equipment necessary for composting at Scott Stadium. We concluded that the most practical composting option for our initiative would be Royal Oak Farm composting services².

The initiative: what a future “Zero-Waste” Scott Stadium will entail

- Product Changes
 - Because of UVa’s comprehensive recycling programs, a substantial number of the products sold in the Stadium are already recyclable.
 - The products that would need to be replaced with compostable products include plastic cutlery, aluminum foil (used for hotdogs), trash bags, napkins, cardboard pizza boxes, and wing trays.³
 - The compostable products best to use would be from EcoProducts®, which is the company from which UVa already buys their compostable materials for the dining halls. Aramark also uses EcoProducts for various events such as graduation.
- Operational Changes
 - Trashcans will need to be converted to compost bins, which solely entails replacing the trash bags with compostable trash bags then educating fans on which products can go where (this should not be difficult, as everything sold will be compostable, and everything recyclable will continue to go to recycling bins). Due to the importance of keeping the compost free of contaminants, we would hope to create a student workforce to stand at the waste stations at the start of the initiative.
 - UVa already has a team of students that sort through recycling after football games. This team may need some augmentation due to possible increased volumes. Mr. Bauman also hires student groups to scan the stadium for recyclables and trash after games.
 - Compost will need to be collected in a compost pile that will then be picked up from the stadium (at the same fee of garbage disposal) by a truck from Royal Oak Farm on the 6 Saturdays that are game days.
 - The cost of compost pick-up is comparable to landfill pick-up costs, and therefore is not detailed as an expenditure in the “Budget/Funding” section.
- Publicity campaign

² Royal Oak Farm in Evington, VA (which is closer to grounds than the landfill by about ten miles), manages everything from the pick-up of compostable waste, to the dispersal of the compost after it is manufactured at the farm. Royal Oak Farm can handle over 500 tons per day of compostable wastes, and has the capacity to cost-effectively compost food and products wastes that would come from Scott Stadium after Football games.

³ Detailed cost differences in Budget/Funding section

- If the proposal is accepted and athletics agrees to take on the initiative, we will campaign for student support of the initiative and strive to educate the student body about the initiative through advertising.
- We will solicit the support of the Sustainability Committee of the Student Council and other sustainability groups around grounds to gather manpower for the additional recycling separation that will be required following football games.
- We would build excitement surrounding the initiative through a “Green Out” at a UVa home game in the fall, effectively showing UVa’s environmental awareness and the work of the athletics department in promoting sustainability at the University.

Timeline/Schedule

October 2010 – Developed a plan and started preliminary research for project design. Explored the project precedent at CU Boulder. Met with representatives from the Athletics Department to discuss feasibility and current practices.

November 2010 – Met with representatives from UVA Dining, UVA Sustainability, and athletics in order to formulate price comparisons, gather information on composting, and spread awareness for out initiative.

December 2010 – Have complete, detailed framework of the product changes, operational changes, and publicity campaign necessary to make Scott Stadium “Zero Waste.” Outline all costs and benefits.

Spring 2011 – Seek corporate sponsors for the initiative to absorb costs and increase publicity. Work with Student Council to plan a public information campaign aimed at students for the fall; look into publicity opportunities outside the UVA community.

August 2011 – Begin extensive campaign to inform the student body and the UVa community. Assure all changes have been prepared and implemented for the season.

September 2011 – Implement Zero-Waste Initiative during 2011 football season.

Budget and Funding

The primary costs of the project result from the transition to compostable products. Understandably, the biggest barrier to the initiative is the additional costs of compostable products. Our costs assessments based on confidential pricing information received from Aramark suggest only nominal additional costs to athletics from the switching over to compostable products when considering the environmental benefits gained of diverting the impressive volumes of material from the landfills. There would be an estimated \$2,292 in costs of products over the course of the entire season, based on last season’s product volumes. There are three options being considered for providing the funding necessary to make the changes:

1. With enough student and community interest, the University may be willing to absorb the additional costs of compostable products. We could also seek grants within the University to fund the initial stages of the initiative.
2. Another option is the use of private and corporate sponsors to help mitigate costs to U.Va. Their advertisements and company status would benefit the entire initiative's public salience and hopefully encourage additional sponsors and interest. This is what CU Boulder does.
3. A third option is to pass on all or part of the additional costs to consumers through higher concessions prices.

It is important for Athletic Facilities to understand that the costs of compostable products have fallen since the 1990's (see Graph 1, Appendix A) and will continue to fall as more universities and business enterprises switch to sustainable products due to growing demand, much like price declines that occurred with recycling in the early nineties. According to UVA's director of utilities and energy Cheryl Gomez, it used to cost UVA upwards of \$350,000 to recycle; whereas, it now costs \$21 dollars per ton less to recycle than to landfill (Provence). Similar trends are expected from composting.

Additional costs would include the costs of the publicity campaign, involving posters and stickers for the waste stations. These costs could also be covered by sponsors or grant money.

Conclusions

Documentation and Assessment

We decided to assess our success within the semester based on whether we were able to compile an organized and effective proposal to give to Athletics in hopes of gaining their support for our initiative for the fall. Our documentation is the graphs, images, and information we have compiled in our research throughout the course of the semester.

Assessment of this semester's steps to achieving our goal:

- √ Developing healthy and mutually beneficial relationships with our community partners
- √ Negotiating with vendors to encourage the use of only recyclable and compostable products to be sold at Scott Stadium
- √ Raise awareness about the possibility and need of a "zero-waste" Scott Stadium

Beyond the semester:

Success will be determined by actual implementation of the initiative next fall.

- Whether **all** products have successfully been converted to compostable or recyclable products
- Managerial and operational changes detailed above have been enacted
- Publicity campaign successfully raises awareness about the initiative

Once the program is implemented next fall, the most meaningful metrics will be the amount and percent of waste diverted from landfills. Other measurements of note could be public attitudes as determined through surveys and a detailed assessment of energy and landfill capacity saved through the initiative.

Dissemination

In the weeks preceding the first game day implementation, there would be extensive advertising to the student body to participate in the program. Just as CU Boulder's initiative progressed, we hope that banners, flyers, and electronic informational campaigns could help raise awareness of both the program and environmental concerns in general. If sponsors are obtained, their advertisements would be helpful in dissemination. Visual displays, such as symbolic displays or pictures of the waste generated at football games could be especially convincing methods of advertisement.

The Student Council's Sustainability Committee would be valuable in ironing out the small details of implementation that would nevertheless be crucial for success. On game day, volunteers could guard the recycling and composting stations to ensure proper disposal. They could also provide information on game day to entering fans that may be unaware of the initiative and its benefits.

Lessons Learned

The barriers to success we had to overcome in our project design included the multiple organizations and entities involved in the success of the project, ranging from Athletic Facilities, vendor, composting services, and the UVa community. Each community partner referred us to another for more specialized information and aid in our project, which we later had to synthesize.

The part of our goal that we did not achieve over the course of this semester is fully affirmed contracts and agreements to assure the commencement of tangible work towards a fully "Zero-Waste" Scott Stadium in the Fall. We hope to achieve this in the spring.

The barriers we anticipate to in the actual implementation of the initiative include possible logistical complications with composting and transportation services due to the red tape we were made aware of that is associated with composting permits and transport. Based on CU Boulder's experiences, we also anticipate an adjustment process into the first year of the initiative, making statistics less impressive at the start as we hope for them to be with initiative in full swing.

The challenges of creating sustainable change include the fact that sustainability often means environmental benefits with monetary costs. Also, lifestyle changes can be required to obtain sustainable practices, and encouraging lifestyle changes can take a lot of dedication, dissemination of information, and time. Creating change takes persistence (e-mailing then calling multiple times in order to arrange meetings) and charm.

If we were to do the project over again, we would want to have more concrete background research and goals before each meeting in order to ensure progress. We would make specific requests earlier on in order to launch real changes at earlier stages.

Bibliography

- DeBell, Jack. "Rocky Mountain Greener Venues Partnership." *University of Colorado's Folsom Field*. CU Recycling, 21 July 2010. Web. 22 Sep 2010.
<<http://www.epa.gov/osw/partnerships/wastewise/challenge/gameday/cu-rmgvp.pdf>>
- Galbraith, Kate. "A College Football Stadium Cuts Its Waste." *Green: A Blog About Energy and the Environment*. 31 Dec 2008. Web. 21 Sep 2010.
<<http://green.blogs.nytimes.com/2008/12/31/a-college-football-stadium-cuts-its-waste/>>
- Provence, Lisa. "(Re)Cycle of life: We want to believe." *The Hook*. February 8, 2007.
<http://www.readthehook.com/Stories?2007?02?08?COVER-Amalg.rtf.aspx>
- "Ralphie's Green Stampede Initiative." *CUBuffs.com: The Official Home of Colorado Athletics*. 2010. Web. 21 Sep 2010.
<http://www.cubuffs.com/ViewArticle.dbml?&DB_OEM_ID=600&ATCLID=1549812>
- "Rethink Recycling." http://www.rethinkrecycling.com/government/eppg/-buy-products-services/compostables#eppg_cost
- Royal Oak Farms. <http://royaloakfarmllc.com/v.php?pg=2>
- Thomson, Vivian E. *Garbage In, Garbage Out*. Charlottesville, VA: University of Virginia Press, 2009.

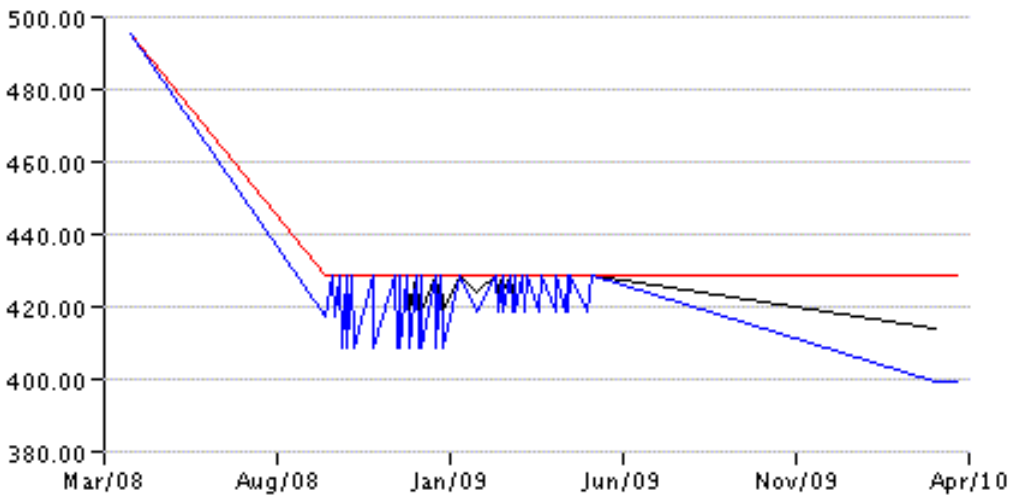
APPENDIX A

Table 1
Zero-Waste Initiative
2010 Cavalier Concessions Football Units Sold

| Item | | Units sold | Est. Cost of 2010 Volume | Estimated Cost of Compostable Alternative | Price Difference |
|---------------|----------------------|----------------|--------------------------|---|-------------------------|
| 22oz Cups | (recyclable plastic) | 45,130 | n/a | n/a | \$0 |
| 32oz cups | (recyclable plastic) | 33,922 | n/a | n/a | \$0 |
| Bottled Water | (plastic bottles) | 61,065 | n/a | n/a | \$0 |
| Bottled Soda | (plastic bottles) | 23,340 | n/a | n/a | \$0 |
| Hot Dogs | (foil bags) | 24,974 | \$1,293 | \$1,318 | \$25 |
| Burgers | (foil bags) | 4,652 | \$501 | \$682 | \$181 |
| Wing Trays | (paper trays) | 6,568 | \$1,135 | \$1,878 | \$743 |
| Fry Cups | (paper cups) | 5,140 | \$1,014 | \$1,023 | \$9 |
| Pizza | (cardboard boxes) | 10,534 | \$1,901 | \$3,235 | \$1,334 |
| Total | | 215,325 | | Total Price Difference for Products (additional expenses): | \$2,292 per year |

Graph 1
 Price history of compostable product from March of 2008 to April of 2010 showing downward trend (from online price comparison website nextag)

Price History Mar-2010 (c) NexTag



<http://www.nextag.com/Compost-Equipment-527862161/price-history.html>

APPENDIX B

ACKNOWLEDGEMENTS

Our highest gratitude goes to our community partners Mr. Jason Bauman, the Associate Director of Athletics for Facilities and Operations, and Mr. Rodney Griffin, General Manager of Cavalier Concessions and Clothing and UVA Dining Services, for their assistance and interest in our initiative thus far. They have both taken time out of busy schedules to meet with us on various occasions and have vested an interest in providing any information and ideas to help our project. Their incredible receptiveness, attentiveness, and professionalism were essential to the success of building a foundation for this project.