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Proposal for implementation of an E-Receipt
System and Non-Toxic, Compostable,
Receipt paper at the University of
Massachusetts Amherst Dining Facilities

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Patricia Murphy

Grant Proposal

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Abstract

We are seeking a grant of \$10,000 to help make the University of Massachusetts Amherst receipt-optional by the year 2018. In order to make the University of Massachusetts Amherst receipt-optional, we plan to implement an e-receipt system into all of the retail locations on campus, where customers will have their receipts emailed to them via a provided email address. However, we recognize that sometimes receipts are still necessary for keeping track of orders, so we would like to change that receipt paper from the 1-ply BPA-containing thermal paper, to a BPA-free recyclable alternative. The main objectives of this project are to reduce costs to the university, create a safer work environment for employees, reduce waste on campus, and further the school's impressive record of sustainability. In the long run, this project will save the University of Massachusetts Amherst upwards to \$25,000 per year, allowing them to invest in other sustainable and green practices across campus.

Introduction & Background

UMass Amherst boasts the best college dining in the nation and is a leader in campus sustainability. With a permaculture garden initiative, composting program, and farm to table approach, they have competitively earned their place in the top 50 Green College campuses (Fitzgibbons, 2016). Although UMass is superior in innovative and novel approaches to increase their green reputation, more can be done to improve these rankings.

Currently, UMass serves 45,000 meals a day and is recognized as the largest campus dining enterprise in the nation (Fitzgibbons, 2016). The Blue Wall, a campus food court, and various retail locations on campus print receipts with each item purchased. Per day at UMass, 18,273 receipts are printed for items \$10.00 or less (Sullivan, 2016). According to the United States Internal Revenue Service (2015), companies face no legal obligation to print receipts for their customers so there is no reason for all of this wasted paper, especially when the average Blue Wall receipt is \$7.59 (Boss, 2015). Additionally, each receipt printed costs a little less than 1 cent, so UMass spends about \$182.73 on receipts everyday (Hines, 2015). The receipt printing is environmentally destructive as well since an estimated 55,000 receipts contribute to 1 tree. This means in less than 5 days, UMass will cut down 1 tree in order to produce their receipts. In the United States alone, in one year, receipt production wastes 250 million gallons of oil, 10 million trees, and 1 billion gallons of water. Receipts generally end up in recycling or trash and contribute roughly 1.5 billion pounds of waste in landfills annually (Hines, 2015).

Although UMass supplies recycling and compost bins in all of their retail facilities, receipt paper must go in the trash. The receipts printed at UMass originate from 1-ply thermal receipt paper (Sullivan, 2016). Thermal receipt paper is not recyclable and not recommended to compost because it contains Bisphenol A (BPA). BPA is a known carcinogen and is linked to liver damage and obesity (Horman et al., 2014). If receipt paper is accidentally recycled or composted, which it often is, this toxic compound can end up in the environment. Additionally, the touching of the BPA coated paper has been

traced to larger concentrations of BPA in retail worker's blood and urine, meaning BPA easily seeps into our bodies through dermal contact (Hormann et al., 2014).

Currently there is a bill pending in the Massachusetts senate to ban BPA from receipt paper, but this ban may not be effective. Although the legislature works notoriously slow, in the event the law does proceed, it is proposed by many scientists that a more costly paper will take its place with chemicals potentially more harmful (189th General Court of the Commonwealth of Massachusetts, 2015). Additionally, the lack of recycling/composting of this paper will still be present and it will still end up in landfills. Overall, receipts provide an unnecessary economic, health, and environmental ailment which can easily be mitigated if we move to a receipt free computer system. Many stores currently operate under paper free systems and because there are no legal obligation to print receipts, this is a feasible option to solve this universities excessive receipt printing. For customers specifically requesting paper receipts, it is proposed to substitute the current thermal BPA paper to a compostable, BPA free, receipt paper.

Team Qualifications

Our team is made up of four University of Massachusetts Amherst undergraduate students:

My name is Kyle Grasso and I'm a senior Natural Resource Conservation (NRC) undergraduate with a focus in fisheries ecology. As an NRC major, I have gained a great background in resource allocation and sustainability. I am a supervisor one of the popular dining halls on campus, Berkshire Dining Hall. Working in the dining hall, I have become very familiar with the steps our dining halls are making to improve our green reputation and to establish our campus as leaders in sustainability.

My name is Randa Kallin and I am a senior at the University of Massachusetts Amherst earning a bachelor of science in Environmental Science. As an environmental science major I am interested in environmental toxicology which is the study of how toxins from the environment get into our bodies. I am well versed in lab work and currently work in analytical chemistry at the Peltier Aerosol Laboratory where I conduct several literature reviews of scientific heavy material. I have taken this information and been able to publish papers and earn research grants through proposals so I am critical fact checker and am comfortable extracting numbers and particle concentrations to support hypotheses.

My name is Taryn Ramey and I am a junior studying Environmental Science at the University of Massachusetts Amherst with a focus in environmental policy. I have learned a great deal about the significance of practicing sustainability through my studies and I am interested in writing policy to help encourage others to live sustainably. In addition to this, I am also a supervisor at Berkshire Dining Commons, which has familiarized me with some of our dining program's initiatives that helps make our school one of the most sustainable programs in the nation.

My name is Patricia Murphy and I am a senior pursuing a degree in Natural Resource Conservation (NRC) and journalism at the University of Massachusetts Amherst. My interdisciplinary studies have allowed me to better assess the relationship between the ecological importance of sustainability and the intersocial benefits simultaneously. I have also had experience with nonprofit organizations and student groups, such as Real Food on campus which have worked to switch the procurement

sources of the university's dining purchases to more wholly sustainable alternatives, making me aware of the administrative sides of shifting products.

Project Description

Our group wants to reduce the use of paper receipts from retail dining services on campus, which will drastically cut down on paper waste. We would like to implement an “e-receipt” system, which is one that allows receipts to be emailed to the consumer rather than printed. In addition to this, we want to switch from using regular thermal paper to a BPA-free alternative. Some customers will still want a printed paper receipt, and BPA-free paper is a safer, more eco-friendly option.

We reached out to Van Sullivan, who is the Director of Retail Dining Services on campus. We first needed to know if the receipt issue has been addressed at all, what type of receipts UMass uses, and approximately how many receipts get printed each day. He informed us that the issue has not yet been addressed, but it is something that they would like to look into in the future. In addition to this, we learned that UMass uses 1-ply thermal printer rolls, which contain BPA. There are approximately 65 academic days in an average semester at UMass, and if on a typical day approximately 18,000 receipts are printed, that means that in the course of a semester, almost 1,170,000 receipts are printed. During the academic year, 2,340,000 receipts are created and are ultimately thrown in the trash or littered on the ground. This waste would be greatly reduced by implementing an “e-receipt” system. A large majority of retail dining purchases are made with student UCards that are already linked to their online account and email address. Whenever a purchase is made, their receipt can be sent via email in lieu of printing a hard copy.

However, not all purchases are made with a UCard, so this system would allow the cashier to manually enter their email address, or a paper receipt can be still be printed if an address is not provided. Since it is difficult to completely eliminate paper receipts, we propose that a BPA-free receipt paper be implemented, which are a biodegradable, recyclable, and an overall more environmentally friendly option. Our goal is to drastically reduce the amount of paper receipts created on campus, and a combination of these two efforts will help achieve this.

In the future, we will need to collaborate with Retail Dining Services to find the receipt software that works best for them and to work out an exact budget. After this, it will take a few weeks for the e-receipt system to be integrated into the UMass Dining program. New technology will need to be installed, and cashiers will need to be trained on how to use the software. Additionally, BPA-free thermal paper is slightly more expensive than regular thermal paper, so this needs to be factored into the budget. According to information from an office supply store, standard 1-ply thermal receipt paper costs approximately \$1.07 per roll, whereas BPA free paper costs around \$1.94 (Staples). However, we are anticipating a yearly savings of about \$66,000.00 in receipt expenses alone, so some of this money can be used to invest in the BPA-free thermal paper. Ultimately, we expect that the implementation of this project will cost \$10,000.00.

Benefits to UMass

The university has an opportunity to further their commitment to sustainability and reduce campus waste and open up safer, healthier alternatives and to increase their economic and management efficiency by switching their receipt process.

According to the Princeton Review (2015), UMass Amherst is one of the top 50 “environmentally responsible colleges.” Ranked 21st, the university cites sustainable initiatives including diverting 57 percent of campus waste from landfills as one of their sustainability milestones. By switching to an e-receipt model the university would be able to exceed its past goals as a low-waste campus by potentially eliminating more than 2.3 million paper receipts from circulation per year. Each of the current receipts printed on BPA paper are then sent to landfills due to their inability to be recycled.

The process of switching to an e-receipt model acts in conjunction with the university's established mission of being a sustainability leader and model for other institutions in the Commonwealth and around the country. Comparably sized schools, such as University of Wisconsin - Madison with around 40,000 students, have successfully transitioned to no-receipt or BPA-free receipt paper systems in their dining operations. The successful implementation of this on a high population school shows the potential for other large scale applications. UMass has already been rated the campus with the #1 Best Food in the United States by the Princeton Review. The experience that is expected by consumers when they eat in these campus retail dining centers is often begun with the handing off of a receipt. With both students and community members being served more than 18,000 meals in retail eateries every day, the university has more than 18,000 opportunities to educate the public on their mission to reducing waste and helping these individuals be an active part of the campus green community.

By switching to both an e-receipt system and implementing supplementary bisphenol A (BPA)- free receipt paper, the university has the ability to eliminate a contaminant that has been linked to dangerous hormonal and neurological issues.

(Hornamm et al., 2014) The risk for contamination most directly affects dining staff due to increased exposure. If staff have recently applied hand sanitizer (a known dermal penetration enhancer), a likely scenario due to the high flow of transactions and direct human contact, it was found that levels of BPA could reach 20 µg BPA/g creatinine after just 45 seconds of exposure. This is the same levels needed to develop a likelihood for cardiovascular disease and type 2 diabetes. (Hornamm et al., 2014) Dining Services employs about 5 percent of the student population and hundreds more non-student workers, making it the single largest employer on campus. The university would be taking steps to be a safer employer by working to eliminate known sources of carcinogens.

The proposed transition to e-receipts and BPA-free receipts is both efficient and economical. Students and staff at UW-Madison successfully made all cash registers receipt optional. This is estimated to have “cut receipt paper expenses by close to 90 percent, saving about \$20,000 to \$30,000 per year” for their university (Sakai 2015). The money saved by making registers receipt optional can directly compensate for costs of implementing a new system and further savings can used to invest in new sustainable options. The efficiency granted with an e-receipt system is also beneficial to the university and its customers. This could make simple tasks like returning an item or confirming purchase history much more accessible. It also gives students a more efficient way of tracking their own purchase histories.

While innumerable individual benefits can be yielded from this ecologically sustainable alternative to receipts, the main themes of holding true to the mission of

sustainability, financial benefits, health benefits, and efficiency are some of the dynamic benefits of our proposed plan.

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