Tufts University Green Fund Initial Idea Submission

Applicant Information:

Name:

Zosia Stafford, Natalie Sheehan, Ananya Ram, Matthew Diamond, Aditi Periyannan, Theresa DeLucia

Role at Tufts (e.g. Undergraduate Student, Graduate Student, Faculty, Staff):

Undergraduate Students and Graduate Student/Staff

Email and Phone # of Lead Submitter:

Theresa DeLucia; 631-885-0415 (cell), 617-636-3476 (work)

Campus:

Medford/Somerville

Project Title:

Campus Compost

One Sentence Description *(This is how your project will be described on the Green Fund website):*

Campus Compost is a more effective, odorless composting system that works on an industrial scale at Tufts; we hope to improve the perception of composting and increase the amount of students composting outside of the dining halls.

General Application Questions:

1. **What project would you like to fund with a grant from the Green Fund?**

We would like to fund a more efficient compost system on the Medford campus. We will design odorless, long-term compost collectors that are easy to fill, empty, and monitor. This will encourage more students, staff and faculty to use the compost system and would make it easier for the Eco Reps and related organizations to manage campus compost. This proposed project would be an expansion on a composter prototyped by December through a Senior Capstone Project. Our hope is to create a pilot program that will implement and maintain a fleet of these efficient composters throughout campus and beyond.

2. **Who would you work with on this project? Who would need to be involved?** *(For example: are there departments you would need to reach out to for help implementing or facilitating your project? If you are hosting an event, you might need someone to help you set up and help clean up afterwards. Do you need permission from anyone to complete your project?* **Include their role** *(collaborator, advisor, vendor, resource)* **and whether they have been confirmed their involvement in the specified role. Undergraduate students must have a faculty/staff advisor submit a letter of support for their project which indicates their willingness to mentor the proposed project.**

Name and Title	Role	Status
Chris Rogers	Mechanical Engineering Professor (Advisor)	Confirmed
Bryony DuPont	Mechanical Engineering Professor (Advisor)	Confirmed
Theresa DeLucia	Graduate Student / Staff (Collaborator)	Confirmed
Eco Reps	Collaborator	Confirmed
Tufts Waste Management	Resource	Pending Confirmation

We will primarily be working with the Department of Mechanical Engineering (ME), The Division of Agriculture, Food and Environment (AFE) at the Friedman School, and Tufts Eco Representatives from the Office of Sustainability.

In the ME Department, Chris Rogers and Bryony DuPont will serve as resources for the project, and have confirmed their involvement. We are currently enrolled in their senior design course for the Fall 2021 semester. As part of our capstone project, we are developing and designing a composter prototype to be replicated for Campus Compost. For this project they will be assisting us in the design process, providing us with expertise, and advising us on our relationship with other collaborators.

We have also connected with Theresa DeLucia a master's student in the AFE program and staff member at the Dental School. She is an Eco-Ambassador for the Boston campus and brought the need for this project to our attention. She has confirmed that she will serve as an advisor on the project guiding us as we move forward with Campus Compost and assisting with the pilot program.

We would also need to collaborate with Tufts Waste Management in order to implement our composting devices/system. We understand that this will require training and time if the current waste management team were to assist us, which is why we have spoken with the Tufts Eco Reps, who have confirmed their role as a collaborator in the implementation and maintenance of our system. We are pending support from other facets of Tufts Waste Management for administerial assistance in implementing our final system.

3. **What costs would be involved in your proposal? Please provide a rough budget.**

The Green Fund would allow us to take a prototype (built on our own this semester) and convert this to a pilot program. To accomplish this, we anticipate the following costs:

$4,000 - manufacture and produce 20 composting containers at $200/unit (cost of materials needed including sensors, electronics, acrylic, time in fabrication spaces, etc)

$1,000 - offsite manufacturing/fabrication costs (for large-scale fabrication not achievable in available campus makerspaces, such as plastic injection molding)

$1,000 - implementing improvements into prototype based on user feedback (1 iteration of product)

$1,000 - educational material development (such as graphics and signs about correct composting behavior)

$1,000 - training time for staff (potential collaboration with Eco Reps to fix the currently ineffectively campus-wide composting system)

$500 - transport & implementation

$500 - publicity to Tufts + local community (encouraging compost awareness)

$500 - licensed engineer consultation

$700 - User + product testing (analyzing usage, quality, etc.)

$10,200 is our estimated total cost

4. **What steps would you take to accomplish this project?**

We will be doing the initial design and prototyping for this project through our capstone project. We hope to end the semester in December 2021 with a working product. This will be accomplished by brainstorming and choosing several potential designs, consulting with potential end users, simulating our designs with CAD technology, and fabricating a prototype with support from Nolop FAST Facility and Bray Labs.

After this process and funding is secured, we hope to expand this project into a pilot program. We will consult with our partners at the Office of Sustainability (Eco Reps and Eco Ambassadors) for feedback and perform user testing with focus groups. In addition, we will consult with a licensed engineer familiar with composters to see if there are other changes that must be made to product design. After receiving feedback, we will implement improvements to our prototype.

With increased funding, we will be able to improve our product with better materials, more accurate sensors, and more precise offsite manufacturing. Once we have a single composter that has performed well with user and product testing, we will begin producing more units. Our goal is to have a fleet of 20 composters at $200/unit, that can be distributed around campus and monitored remotely.

The next steps will involve publicity and education. We will develop educational materials with The Office of Sustainability to explain how to compost most effectively. Collectively we will train Eco Reps, facilities and additional relevant individuals on how to use and maintain the composters.

Our final step would be to reach out to the Boston Health Sciences Campus and Boston Fenway Campus (SMFA) to implement our composting system there as well. This could potentially require further funding to build more composters if they require more than the proposed 20 could service.

5. **How would your project help or benefit the Tufts community?**

Tufts does participate in a composting program, but the system has many flaws and inefficiencies- our project will fix these issues. Currently, the compost collection containers create a smell and attract flies. They will quickly begin to stink before they are full - forcing Eco Reps to spend more time emptying and maintaining them.

Our project would result in an odorless, more convenient product, which will allow for compost to collect for longer time periods. Due to the design, we will be able to distribute the compost bins more widely on campus encouraging more students, staff and faculty to participate in composting. Ultimately, our project will lead to a cleaner and more environmentally friendly campus and community.

What can I expect next?

The Green Fund committee will meet in early October and decide which projects will advance to the next round. These projects will be asked clarifying questions about details specified in this application. The committee will meet again and review the responses to its questions and vote to advance proposals based on those answers. Projects that advance past the clarifying questions stage will then be asked to fill out a more complete application (which can be found at go.tufts.edu/GreenFund) including a budget and a Gantt chart with accompanying letters of support from necessary collaborating entities at Tufts.

When finished with this initial idea submission, please save as a PDF and email to GreenFund@tufts.edu. Thank you!