Stanford Student Green Fund Program

Annual Report 2014 / 2015

Office of Sustainability | Sustainability and Energy Management

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About the Green Fund

From 2008-2015, the Stanford Student Green Fund provided up to $30,000 in one-time grants for student-led projects that improve campus sustainability. This fund was offered and managed by the Office of Sustainability. The fund and its grant-making committee empowered students by providing a source of funding, guidance, hands-on experience and networking.

Students with a project idea applied for funding in late fall quarter, and then awardees implement their projects during winter and spring quarters. Awardees were selected by the Green Fund Grant Committee, consisting of both staff and students. Often groups of students worked together on a single Green Fund project. Students received support and guidance from faculty and staff mentors throughout project development and implementation. The Green Fund Project Manager, a member of the Office of Sustainability, facilitated projects, provided support, and helped ensure that proposals are successfully carried through to completion.

Stanford Green Fund 2014-2015 Committee Members:

Fahmida Ahmed (Chair), Staff

Meghan Kearns (Project Manager) Staff

Lauren Hennessy, Staff

Kristin Parineh, Staff

Ethan Heil, Student

Andrew Jacobs, Student

Morgan Abbett, Student

Alex Monahan, Student

About the Green Fund

General Project Requirements

The following criteria were used to grant awards. A proposed project should:

Aim to reduce Stanford's ecological footprint: Projects can directly address environmental sustainability on campus or involve off-campus activities that affect on-campus sustainability. Projects may target such areas as energy efficiency, waste reduction and education.

Have a clearly defined, measurable outcome: Proposals must provide a way to evaluate project success and allow follow-up, including a report after implementation.

Incorporate publicity, education or outreach: Projects must have a component that raises awareness of sustainability issues on campus, such as an article in a Stanford publication or an associated workshop or course.

Include direct student involvement: Projects should involve students in their design and implementation. Examples include internships, initiatives with student oversight, student research and projects proposed by students.

The program is administered by students with staff and faculty oversight: Funds are awarded by the Grant-Making Committee, which includes students, faculty, and staff.

About the Green Fund

Best Practices Applicants Should Know

After seven years of Green Fund projects, a number of factors were identified as keys to making a project a success. These factors, described below, were given careful consideration by students interested in carrying out a Green Fund project.

Plan far in advance: Students should design projects during Spring and Summer quarters so that they can identify their sponsors and mentors and immediately begin the grant application process in Fall quarter. Projects that do not begin until later in the school year are often rushed through the application process, which can delay or cripple implementation altogether. Students who plan a project well in advance have the easiest time focusing on implementation once the fund is granted.

Begin with the end in mind: Students should take their time thinking about how their idea will be implemented before they apply for funding. The Office of Sustainability is available throughout the year to provide guidance for students coming up with project ideas. Before submitting a Green Fund application, students should meet with members of other student groups and the Office of Sustainability to enhance their ideas, learn about potential challenges, etc.

Larger, well-constructed projects are more likely to receive funding: In the past, the Green Fund has awarded small amounts of money to numerous small projects, which had limited impact and were not maintained from year to year. The Green Fund Committee has shifted funding goals towards fewer and better-quality projects that have a broader (5K-10K) range ask. Small projects are still able to apply, but are encouraged to think bigger both in terms of effort and applicability.

Maintain leadership momentum: If a project carries over, make sure that leadership is in place for the following year. Several projects have lost their identity and been abandoned because the students behind them have graduated. This is another reason to begin projects early in fall quarter so that no carry-over is necessary.

Utilize Project Manager and staff support: The Green Fund Project Manager is the key liaison between the Office and all approved projects and can assist groups in overcoming obstacles. In addition, projects that have an engaged faculty or staff mentor are more likely to succeed. Office of Sustainability staff or other sustainability professionals on campus can assist potential projects in finding staff and faculty members to act in such a capacity.

Develop a plan for long-term funding: The Green Fund is intended to be an incubator for first-time projects, not a source of continued funding for groups. Groups should not rely on Green Fund for continued funding of existing projects and programs. Instead groups should investigate alternative sources of continued funding through ASSU and other campus entities.

Sustainable Living Video

Report Authored by Olivia Reyes-Becerra

Project Summary:

Throughout this internship, I helped write, cast, and produce a Sustainable Living Video Guide to showcase the variety of sustainable citizenship on Stanford campus. The video complements Stanford's Office of Sustainability and R&DE's Sustainable Living Guide as a part of a larger university effort to educate and train Sanford's community to work toward a sustainably-minded community.

The video follows 6 Stanford community members whose lives and work are impacted by sustainability. I helped organize the video format, coordinate interviews, and transcribe the full-length interviews to be pieced into the video.

Through community member interviews, the video models accessible sustainable behaviors, making it easy for students, staff, and faulty to observe, repeat, and incorporate them into their lifestyles.

Project Status:

The Sustainable Living Video is now complete and being featured on the Residential & Dining Enterprises website. The video was featured in a newsletter distributed to all incoming students and was shared through the Office of Sustainability's social media networks.

Six campus members were featured in the final video. Interviews took place across campus to demonstrate how sustainability is present throughout the university.

Sustainable Living Video

Project Timeline:

- **January**- Receive funding, host stakeholder focus groups to identify video goals
- **February**- Identify potential actors, filming locations, and production timeline
- **March**- Develop and finalize video script. Begin filming actors and background shots
- **April**- Continue interviews, brainstorm video transitions
- **May**- Transcribe interviews and edit video
- **June and July-** Video production
- **August**- Rough draft video shared with stakeholder groups to collect feedback
- **September**- Finished video shared with incoming students and transfers

Project Highlights/Favorite Moments:

While I was not able to attend the community member's interviews, transcribing the footage was a very cool experience. Hearing the member's personal stories about their commitment to the sustainability community and their path to sustainable citizenship is at once very close to some of the reasons I consider myself a part of the sustainability community and yet so personal to each individual that listening to each interview was inspiring.

Project Challenges/Lessons Learned:

The vision for the video took many forms. The process of considering all ideas and discussing the project vision took a lot longer than I initially expected, but it proved useful in cultivating trusting relationships with all team members.

Project Time Commitment:

3-8 hours per week

Because the Sustainable Living Video features the stories of students, staff, and administration, it can be shown to diverse audiences throughout the year

Sustainable Living Video

Measureable Outcomes:

- Completed 5 transcripts of 30+ minute interviews
- Contacted 4 undergraduates as candidates for SSLV interviews
- A six minute video was produced and is available on the R&DE website and YouTube page: https://www.youtube.com/watch?v=snzcVSK8KVc
- The video shared with 1,700 incoming freshmen and transfers via the Approaching Stanford Newsletter

Project Budget

$1,373 was spent renting equipment for filming the video. Staff time for production was donated by Residential & Dining Enterprises.

Resources Used/Contacts Established:

- Kristin Parineh, Manager of Housing Sustainability Program
- Keith Uyeda, R&DE Videographer
- Curie Sevilla, Assistant Director of R&DE Marketing

Pedal-Powered Bike Light Project

Report Authored by Amara McCune, Moosa Zaidi, Sneha Ayyagari, Devika Patel, Claudia Brunner

Project Summary:

Our project consisted of workshops for students to learn about and assemble pedal-powered bike lights. The goal of this project was to raise awareness of sustainability issues as well as encourage the idea of engineering for social good. We purchased 200 pedal-powered bike light kits and were able to hold two workshops with varying degrees of success. During the workshops, we first gave a presentation that explained the goals of ESW Engineers for a Sustainable World (ESW), as well as the basic physics and design of the pedal-powered lights. We also included slides on energy usage in order to stress the importance of sustainability.

After we gave the PowerPoint presentation, we walked the attendees through the process of assembling the kits and installing them on their bikes. This was the most problematic part of the workshops - not all of the kits had functioning lights. We did, however, invite them back for a workshop the following weekend (the first workshop was held on May 16th and the second on May 23rd) so that they may have a functioning kit. Overall, we distributed seven finished pedal-powered bike lights, and a handful of unmade or partially made kits as well.

Project Status:

The work for our project is not yet completed. Due to the logistical challenges of making the bike lights as well as the unreliable functionality of them, we returned 150 of the kits in exchange for 110 pre-made kits. This will reduce the amount of soldering we have to do, as that was proven to be unreliable.
The new, pre-made kits were delivered in August.

We will pick back up Autumn quarter with running the workshops, and we should be able to hold perhaps five more workshops of 25+ people to distribute the pre-made lights. We will again be giving a presentation and teaching about the importance of sustainability.

Bike light installation workshops were offered to students of all majors

Pedal-Powered Bike Light Project

Project Timeline:

Attendees learned basic physics concepts at the begining of the workshop to have a better understanding of the installation process

- **Fall Quarter-** Applied for Green Fund funding
- **Winter Quarter**- Received funding and began weekly planning meetings with ESW's Local Initiatives Team and the Office of Sustainability.
- **Spring Term**- The original kits were ordered in March and received in April. Two workshops were held with varying success.
- **Summer**- Original kits were returned to vendor in exchange for pre-made kits.
- **Fall 2015**- Workshops begin again at start of new school year

Project Highlights/Favorite Moments:

The favorite moment of the project would have to be the last workshop, where all of our bike lights worked and we installed them successfully on the participants' bikes. We loved to see such enthusiasm for the project and interest in the bike lights, sustainability, and engineering. We were also of course very glad all the lights worked for the second workshop.

Project Challenges/Lessons Learned:

The biggest challenge by far was creating the lights themselves. We did not anticipate how long it would take to solder each light together, as well as how unreliable this entire process was. Because the lights consisted of two circuits that needed to be soldered in a particular way, this was not achieved roughly half the time and, as a result, half of the kits did not seem to work. For any future pedal-powered bike lights purchases, we have learned that it is best to simply order the pre-made kits rather than trying to assemble all of them ourselves. Our original plan was to have workshop attendees solder the kits, but this proved to be hazardous and required a waiver. Additionally, we did not have the space, soldering irons, or time necessary to achieve this.

Project Time Commitment:

3-8 hours per week

Pedal-Powered Bike Light Project

Measureable Outcomes:

- Developed a sign-up sheet that in total had 139 responses.
- Developed a pre-survey that had 10 responses.
- Developed a post-survey that has 3 responses. This is not much data but so far it looks like there is an average increase in sustainability knowledge.
- Wrote an advertising email that was distributed to 1000+ people
- Distributed 7 working bike lights and about 5 unfinished bike lights.

Project Budget

Total, we spend $3,369 on the kits, $450 for shipping, $25 for import taxes. This is slightly less than we were expecting to spend because we got a deal on the purchase of the kits and we did not end up having to purchase caulk or solder.

Resources Used/Contacts Established:

We established two contacts through this project, the first being a contact with our vendor, Qin Gang of freelights.co.uk, the company through which we purchased the pedal-powered bike light kits. We also established a connection with electrical engineering professor and lab manager Steven Clark, who allowed us access to room 004 of the Packard building as well as access to the soldering irons, solder, and caulk needed to assemble the kits.

Bike light workshops will continue through the 2015-16 school year

ScrapWorks

Report Authored by Sonia Baltodano and Hannah Mensing

Project Summary:

The Scrapworks project identified the behaviors and systems within the Stanford food ecosystem (R&DE & vendors) that both positively and negatively impact the creation of food waste on campus.

Quantitative Methods: We gathered data on the nature and volume of food waste at Stanford dining facilities. This data was largely unknown prior to our project. We audited compost and trash dumpsters at cafes and dining halls, the interior and exterior bins, and the buffet lines at the end of a dining service. We identified the amount of and reasons for the destruction of edible food at the end of meals.

Qualitative Methods: We mapped all the critical points of food waste creation, and identified key decision makers along that chain. In order to understand the constraints and mental models affecting individual behavior, we conducted extensive interviews with staff at dining halls and food vendors across campus. We gathered the informal and formal strategies currently used to minimize food waste through ethnographic interviews with dishwashers, chefs, casuals, prep cooks, up to the executive chef of Stanford Dining.

Results: We found that while there was campus-wide interest in minimizing food waste, the staff are lacking the data, tools, and incentives to create the change they want. We found that on average, each dining hall was throwing away between 200 - 500 lbs. of food waste per day, across the food waste chain. However, in at least one location through good management and implementing mostly new behaviors, the amount spent on food was reduced by almost 25% (for a $9,000 savings over that time) while still serving the same number of meals, indicating a reduction in food waste. Based on our qualitative and quantitative research with practitioners, we developed recommendations on Food Waste Best Practices for management and chefs to implement in their respective dining facilities and spheres of influence that we forecast to reduce this waste by 30% on average. We have also created a "Quick Guide" communication tool for training casuals and lower tier staff in the reduction of food waste.

A full day's compost from the dining halls was weighed to create a baseline for conservation efforts

ScrapWorks

Project Status:

We have collected all the data necessary for the completion of our project. We have completed all the waste audits and have concluded our ethnographic interviews. We have summarized our work in a list of Food Waste Best Practices for management and Staff and have developed the Quick Guide for trainings.

Project Timeline:

- **January** – Began audits of Y2E2 and interviews of stakeholders: Coupa Café staff, R&DE staff and PSSI staff. Background research of existing programs, tools and equipment to apply to this project.
- **February** – Continued to do audits and interviews, built a couple of prototypes to test condensing waste in the kitchens through crushing and other mechanical means, and also dehydrating waste, to reduce volume.
- **March** – Gave talks on food waste, toured PSSI facility for waste reduction, continued to do more focused quantitative research for food service, industrial kitchens specifically and benchmarking data.
- **April** – Performed in-depth audits of Wilbur Dining Hall compost (24 hour period). Weighed and measured compost contamination and actual food (75% of compost) and did visual survey of trash (relatively low contamination). Completed observations of students and staff to determine causes and sources of food waste. Continued interviews with more R&DE staff, more managers, chefs and kitchen workers.
- **May** – In depth audit of Stern Dining Hall, of front-of house waste from students as well as buffet line waste attributed to the back of the house policies. Continued testing prototypes for collection and sorting in both front and back of the house in the dining hall. Also developed behavior change signage and way-finding to reduce waste and collect more food. Interviewed many staff again to flesh out list of food waste management best practices.
- **June** – Complied and alalyzed data, presented findings to R&DE Sustainability manager, and finished training documents.

Project leaders sifted through food waste to quantify the amount of servable food being composted on a daily basis

ScrapWorks

Project Highlights/Favorite Moments:

We made a chef cry when we showed them a presentation summarizing our work on food waste. Their feelings were very complex. On the one hand they were so moved by the progress that was being made, and the attention that was being paid, to this issue. But they were also frustrated by the amount of waste we had found, and how powerless they felt to motivate staff to change their behavior. It showed us how important our work is to everyone in food service. The chef's reaction illustrated how much help they need to get control over the creation of food waste. We hope our work will help them understand how to make the changes they want to see in their kitchens.

Project Challenges/Lessons Learned:

Collecting Data is Dirty Business: At the start of this project, PSSI informed us that they estimated that Stanford created 3,900 tons of food waste per year. But this was only an estimate, and lacked granularity and specificity. There was no data on exactly how much food waste is created, of which types, and where. The lack of data was very surprising. To get real metrics, we spent many, many hours doing waste audits. We spent weeks literally digging through dumpsters to find out information that we needed.

"You think you know...but you have no idea": When asked to estimate how much edible, prepared food was being composted each day, one high-level staff person was off by almost a factor of 10, guessing 200 lbs. created in a week per dining hall instead of the actual number of 1,400 – 3,500 lbs. Faced with real numbers, RD&E began to feel empowered to make change. We hadn't realized how little feedback and data managers received. They were making decisions blind.

Audits showed that students were effectively sorting their waste in the dining halls

Dining Halls Are Not Restaurants: It was also incredibly eye opening to see how many behaviors and practices are driven by seemingly unrelated factors– for example, because the kitchen staff are unionized, the incentives that normally used in restaurants to encourage the reduction of food waste cannot be used. Moreover, because the dining halls are essentially "all you can eat" buffets, it is very difficult to estimate how much of each dish will be eaten, as opposed to food service in most restaurants where individuals order discrete dishes.

Personal Connections Take Time: We found that working closely with individuals to understand what was

ScrapWorks

challenging for them was the most successful way to design better systems in the kitchens. This approach, however, is definitely incredibly time-intensive. We didn't realize how much effort it would take really build trust understand the complex systems that govern a working industrial kitchen. This trust and understanding is critical in finding effective methods to minimize food waste in the future. We are confident that by working with those who are making the day-to-day decisions we will be able to create lasting impact that works for the Staff as well as RD&E.

Project Time Commitment:

3-8 hours per week

Measureable Outcomes:

- Participated in 4 events that were attended by over 1,000 people.
- Gave 7 talks to various classes, student design groups, and other organizations interested in reducing food waste.
- Built and tested 20 versions of prototypes around food-only collection, sorting and disposal behavior change, signage and wayfinding and other food waste reducing tools, in the front and back of house.
- Created two videos shared with dozens of people on the project
- Lead and recorded over 30 in depth ethnographic interviews with stakeholders across the food waste space.
- Organized and completed 3 full-scale waste audits of compost bins, front and back of house waste, and collected and audited buffet line only food waste 7 times at multiple locations.
- During those audits, sorted and measured over 1,600 pounds of waste.
- We estimate that a dining hall, if implementing these practices, can save several thousand dollars in just

ScrapWorks leaders shared their findings at Stanford's Celebrating Sustainability Festival

the course of a week via food costs, and across the R&DE dining system, that this could add up to many hundreds of thousands of dollars in savings. This would also represent a reduction in waste, meaning saving not only food and the environmental impact of that food, but also the cost of the landfill/compost bins no longer needed and lesser GHG impact.

Project Budget

We've spent around $500 of our awarded $5,500 budget. We originally asked for a greater amount of funds because our initial hypothesis about food waste at Stanford was that the highest value project we could do was to reduce the amount of food in the landfill by sending it to compost (decontaminating the garbage). This would have required more extensive and expensive physical prototyping of bins, sorters, etc. and much higher prices for implementation of new equipment and training. In fact, we found just reducing the amount of food waste created in the first place was the lowest hanging fruit and therefore the most important project for us to tackle. This turned out to be a lot more about behavior change, which meant a lot of time inputs for us as a team but lower capital inputs, resulting in a lot of money left over for the Green Fund.

Resources Used/Contacts Established:

We worked closely with:

Tami Lin & Thien Hoang at Wilbur Dining Hall, as well as many of the other staff there. They taught us a lot about the practices currently happening in dining halls, and allowed us to prototype and work with them closely to find meaningful, implementable solutions.

Tom Skipworth, Manager at Stern Dining Hall, and many staff there. Allowed us to audit their waste, learn more about what practices were used day-to-day with food waste and taught us about important human needs among kitchen workers.

Dara Silverstein, the R&DE Sustainability Manager at Stanford. Helped us find volunteers, supported various initiatives we set out, and used some of our data to help create changes within R&DE.

Julie Muir, the PSSI Recycling Manager. Gave us lots of important data to get us going, and shared other important resources around waste including policies, historical references, etc.

About the Office of Sustainability

Sustainability is a core value at Stanford—as demonstrated in academics, operations, communications, and events. The Department of Sustainability and Energy Management (SEM) leads initiatives in campus infrastructure and programs in the areas of energy and climate, water, transportation, green buildings, and sustainable information technology, as well as various special initiatives. The Office of Sustainability connects campus organizations and entities and works collaboratively with them to steer sustainability initiatives to fulfill President Hennessy's vision that sustainability will, "become a core value in everything we do." Programs offered and maintained by the Office of Sustainability include:

Collaborative Governance – Chairs and steers the Sustainability Working Group (SWG), with over 100 members from 25 different campus organizations, to review and prepare policy and program recommendations.

Infrastructural Planning & Analysis – Develops strategic plans for the future of sustainability and resource use at the university, taking a long-term view of Stanford's initiatives and the role of sustainability in the university's mission.

Evaluations and Reporting – Reports sustainability metrics, milestones and trends within the university for internal and external review and evaluation.

Campus Communication and Publication – Increases on-campus awareness of sustainability programs and efforts through publications, newsletters, tours, and events.

Academic Integration – Involves students in greening campus operations through internships, a service learning class, Green Fund grants and projects, and student-focused events.

Behavioral Conservation Programs – Creates tangible resource savings on campus through a series of annual conservation campaigns.

The Student Green Fund is part of Academic Integration aspect of the Office's work.

Stanford University

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