Stanford Student Green Fund Program

Annual Report 2013 / 2014

Office of Sustainability | Sustainability and Energy Management

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About the Green Fund

Inaugurated in 2008-2009 academic year, the Stanford Student Green Fund provides up to $30,000 in one-time grants for student-led projects that improve campus sustainability. This fund is offered and managed by the Office of Sustainability. The fund and its grant-making committee empower students by providing a source of funding, guidance, hands-on experience and networking.

Students with a project idea apply for funding in late fall quarter, and then awardees implement their projects during winter and spring quarters. Awardees are selected by the Green Fund Grant Committee, consisting of both staff and students. Often groups of students work together on a single Green Fund project. Students receive 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, facilitates projects, provides support, and helps ensure that proposals are successfully carried through to completion.

Stanford Green Fund 2013-2014 Committee Members:

Fahmida Ahmed (Chair), Staff

Meghan Kearns (Project Manager), Staff

Colleen Kredell, Staff

Kristen Parineh, Staff

Dara Olmstead, Staff

Katie Phillips, Lecturer

Ethan Heil, Student

Hannah Lippe, Student

Andrew Gyenis, Student

Kendrick Kho, 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 six years of Green Fund projects, a number of factors have been identified as keys to making a project a success. These factors, described below, should be 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 advanceW 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.

Following these best practices will help to ensure your project's success.

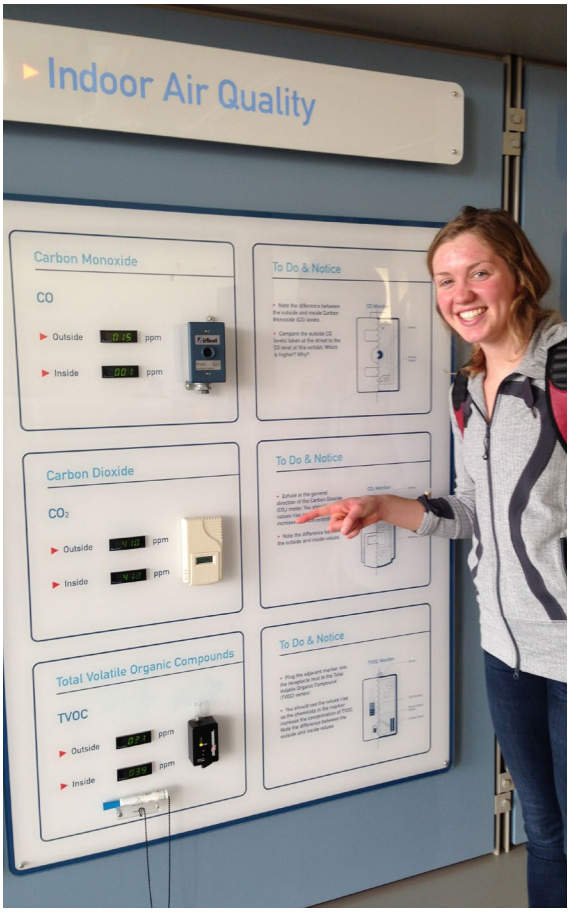
Winter Heating Study

Report Authored by Fiona Majeau and Oliver Wang

Project Summary:

Inspired by the observations of Stanford CEE Professor Gil Masters, R&DE Interns Fiona Majeau and Oliver Wang worked to understand why so many windows in student residence halls are wide open on cold winter mornings. Not only does this trend indicate that energy is being wasted as heat is pumped out the window, it also suggests that there may be issues with student comfort. As Sustainability Interns, their initial goal was to reduce this wasted energy. The issue of student comfort proved to be an equally relevant focus for their project. Oliver and Fiona designed a study that would investigate both the infrastructural as well as the behavioral sides of the situation. They hoped to propose a solution, whether that be in the form of a behavioral campaign, infrastructural retrofits, or even just informing the future design of other buildings on campus to help reduce energy and improve comfort.

Meeting with upper management of R&DE Student Housing as well as partners across campus, including Sustainability Energy Management, Oliver and Fiona were able to gather information and opinions that were crucial to their final study design. The infrastructural side of their study consisted of 3 weeks of data collection within 32 student rooms of Stern Hall, measuring temperature and CO2 levels with Onset HOBO data loggers. They then partnered with kW Engineering, an outside consulting firm, who performed more in-depth analysis, partially informed by their unique ground level data, to create a more technical energy model of Stern Hall. The behavior side of the study consisted of a short survey, distributed to each roommate who hosted a data logger, several in-depth interviews with volunteers, and tri-daily window tallies during the three weeks of temperature logging to count open windows on the exterior of Stern Hall. Combining infrastructural data, behavioral data, and the recommendations made by kW Engineering in their final report, Fiona and Oliver were able to decide on the most effective next steps for Stern Hall and for campus as a whole (see Project Status below.)



Above- *Fiona Majeau learned about air quality while visiting PG&E's Tool Lending Library*

Team Members:

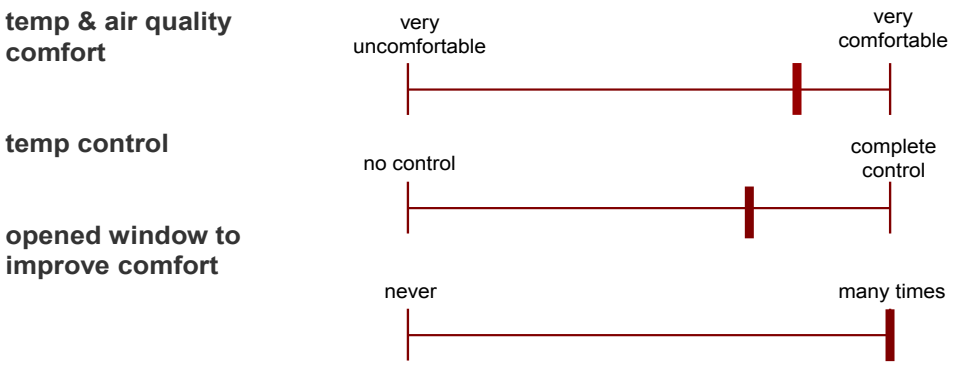
R&DE Housing Interns Fiona Majeau and Oliver Wang

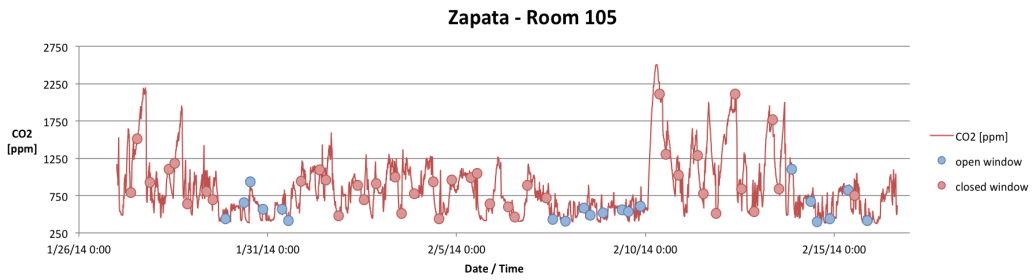
Winter Heating Study

Project Status:

The Stern Hall case study and the energy analysis performed by kW Engineering have been completed. Next steps involve following through with two of the recommendations proposed by kW Engineering. The first is a lighting retrofit which installs occupancy sensors in lounges, lobbies, and outdoor light fixtures. The second is what they dubbed the "basic heating package" which would involve the installation of a control valve on each heater, allowing students to decide how much heat they want coming out of their heater. These valves would build upon the newly installed SESI conversions, enhancing the increased control that came with the campus-wide building conversions. Though these valves are currently used in several dorms across campus, R&DE wants to perform further investigation of their benefits before implementation. kW Engineering also outlined an "advanced heating package" which includes thermostats, occupancy sensors, and window sensors to help manage energy use.

The final recommendation is related to behavior. R&DE wants to make it easier for students to understand how to use their particular heating system, since it varies substantially from dorm to dorm. While there is currently a website for this, it needs to be clearer and more accessible, especially at the beginning of the school year.





Above- *Qualitative and Quantitative data identified a coorelation between CO2 levels and open windows*

Winter Heating Study

Project Timeline:

Time Period	Tasks Accomplished
Fall Quarter- Weeks 3-6	• Developed timeline and work plan for designing and completing study • Met with campus partners to understand current heating systems and processes
Week 8	• Reviewed floor plans and engineering sketches to decide placement of HOBO loggers
Week 9	• Held focus group with non-Stern students to develop survey questions
Week 10	• Created student surveys to be distributed at HOBO logger installation • Received approval from Building Manager, RFs, and RAs of Stern Hall
Winter Quarter- Weeks 1-3	• Obtained and programmed HOBO loggers and Telaire CO2 meters (3 from Green Fund, 8 from SEM, 20 from PG&E Tool Lending Library, 1 from R&DE Sustainability Programs)
Week 4	• Installed HOBO data loggers in 32 rooms to measure temperature and CO2 • Distributed surveys during HOBO installation • Took morning, afternoon, and evening tallies of all exterior Stern Hall windows, marking whether open or closed (everyday, Weeks 4-6)
Weeks 6-7	• Held several in-depth interviews with voluntary participants • Collected HOBO loggers at the end of Week 6 • Loaded and compiled logger data • Entered and compiled survey, interview, and window tally data
Week 8	• Sent compiled temperature, CO2 and behavioral data to kW Engineering
Spring Quarter- Weeks 4-8	• Discussed options with R&DE, kW Engineering, SEM, Gil Masters
Week 9	• Decided on next steps and recommendations

Winter Heating Study

Project Time Commitment:

1-3 hrs/wk	3-8 hrs/wk	8+ hrs/wk

Measurable Outcomes:

- Developed 1 case study of Stern Hall
- Met with 10 project stakeholders
- Held a focus group with 9 students
- Developed a survey that was distributed to 63 students and received 37 responses
- Held in-depth interviews with 3 students
- Tracked window status (open/closed) for all exterior Stern Hall student room windows 3 times a day for 3 weeks
- Tracked the room temperature of 32 rooms (63 residents) in Stern Hall for 3 weeks
- Tracked the carbon dioxide levels of 8 rooms (16 residents) for 3 weeks
- Helped inform the development of 1 energy analysis report by kW Engineering

Project Highlights:

Partnering with Sustainability Energy Management was a huge highlight of the project. Oliver and Fiona were exposed to their endless expertise, unwavering support, and constant enthusiasm throughout this project, allowing it to proceed much more rapidly and productively than it ever could have otherwise. The interns were able to tour the recently updated SESI mechanical room in Stern Hall, pour over engineering drawings of the Stern Hall heating distribution system, and learn how to use HOBOware, the software associated with the HOBO data loggers. The data collected was something that could not have been collected by outside consultants, so it was empowering to provide something to the consultant that was truly valuable. Finally, the interns got the rewarding opportunity to interact with students and listen to their input on how to improve dorm comfort here at Stanford.

Above- *Student interns brainstormed research methods after receiving project funding*

Winter Heating Study

Project Challenges and Lessons Learned:

One big challenge with this project was the complexity of the heating system. There were so many factors to consider when deciding how to collect relevant data that it was difficult to take them all into balanced consideration. Other challenges included figuring out how to maximize resources within a limited budget as well as correlating infrastructural data with behavioral data.

One of many lessons learned was the difficulty of scheduling meetings with important stakeholders and partners given their demanding schedules. This challenge taught Fiona and Oliver the importance of thorough preparation in order to make the most out of the time given. Another takeaway from this project was that it is far more productive to gather as much information as possible at the beginning of the process, rather than throughout. The interns found themselves scrambling in the last few weeks to learn more about relevant, yet subtle, aspects of the system that we should have worked harder to understand in the Fall. Lastly, Oliver and Fiona initially designed their study with a certain outcome in mind rather than solely as a tool for understanding. Though a hypothesis is crucial to any research, it should not sway the design of the study. They began the study with the implicit assumption that students only open their windows when their environment is fairly uncomfortable, particularly temperature wise, but found that this was not entirely the case. Though they managed to expand the study to help offset this bias, being more conscious of assumptions in the beginning may have led to an even more informative study.

Expenses to Date:

Item	Description	Cost
HOBO U12 Temp/RH 2EXT	Data loggers to log temperature data	$140 * 3 loggers = $420
Telaire 7001 C02 Sensor	Hooked up to HOBO loggers to measure and log CO2 levels	$465 * 3 meters = $1395
Telaire 7001 CO2 Sensor Input Cable	Connected CO2 sensors to HOBO loggers for CO2 data logging	$29 * 3 cables = $87
Freight shipping	Shipping cost for above equipment	$36
Extension cords	CO2 loggers required extension cord during 3 week logging period	$7.27 * 7 cords = $50.88
Coupa Gift Cards	Thank you gift for student logger hosts	$5 * 64 students = $320
Jamba Juice Gift Cards	Incentive for students to complete daily log and in-depth interview	$10 * 9 cards = $90
TOTAL		**$2398.88**

Synergy Rainwater Catchment System

Report Authored by Laura Cussen and Andrew Jacobs

Project Summary:

This project's goal was to install a rainwater harvesting catchment for the cooperative house, Synergy, to use for gardens and compost. We will be harvesting rainwater directly off of the roof, through gutter and drain systems already in place. This project will reduce on-site water consumption, provide a better quality drip-line irrigation system, and drastically improve storm-water management and landscape erosion. This project takes a big step in the direction of "local infiltration" of water—localizing the use of water that arrives on site naturally. This is important because 1) water run-off currently inundates the Stanford storm drain system during the rainy season, 2) Stanford pays Palo Alto to take this water 3) the land loses water that is vital for functioning. Rainwater harvesting, however, provides an innovative, practical, and educational solution.

The system works by catching rainwater runoff from the roof of the house in a gutter and directly depositing it into a water holding tank. This allows storage of water for the house during the dry season. Water is applied directly to the garden beds at Synergy through a sophisticated drip-line irrigation system that is already in place. In addition, the water is boosted by the solar pump that will be installed with the rainwater system. The pump will supplement gravity to build the water pressure needed to transport the water from the tank to the garden beds which are approximately 10 to 30 feet from the tank. Overall, this system provides a perfect educational example for the house and the greater Stanford community about water conservation, especially in regards to the present drought-like conditions that persist in the California.

Team Members:

SSS Water Group- Andrew Jacobs and Laura Cussen

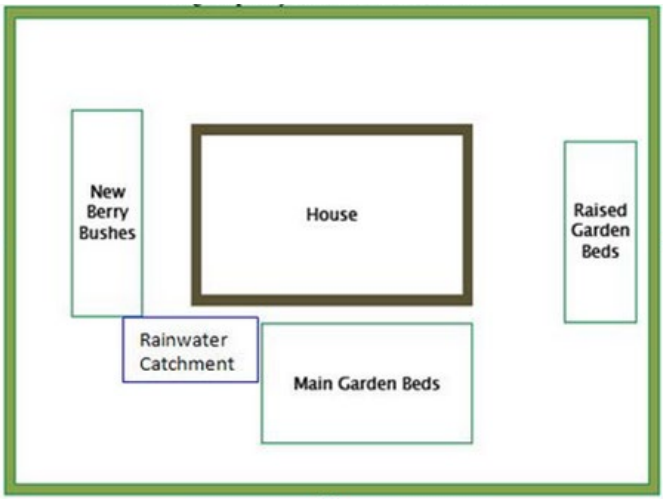
Project Status:

This project is approximately 80% complete. The university completed garden renovations in the summer of 2012 and installed cement pads adjacent to the house for the stable installation of the rainwater harvesting system. Synergy 2012-2013 garden manager, Brittany Rymer, bought and planted fruit trees and berry bushes in the Synergy garden in anticipation of the installment. This year, Andrew and Laura found a contractor who was willing to work with us for the project. They confirmed the project with necessary administrators (Larry Hoffman, Housing Building Manager: Jim Olsen, etc.). The tank has been installed and the contractor has been paid for their work. Next steps include learning how to use the rainwater system as well as educating the house members about the system and the greater water conservation that it provides.

Synergy Rainwater Catchment System

Project Timeline:

Time Period	Tasks Accomplished
4 years ago:	Initial project idea
2012-2013 academic year:	Contractor found
January 2014:	Reached out to contractor. Held initial meeting with Stanford administrators and Synergy house representatives to discuss the initiative.
February-March 2014:	Crucial conference call between contractor, students, and administrators outlining a list of things that needed to be completed.
March 2014:	Synergy house approval at house meeting.
May 2014:	Check received by contractor, tank order, installation dates set. Stanford Daily article describing the project.
June 2014	Tank installed



The new rainwater catchment system will provide water resources to three garden areas at the Synergy House

Synergy's gardens will receive the collected rainwatier through a pre-exhisting drip irrigation system

Synergy Rainwater Catchment System

Project Time Commitment:

1-3 hrs/wk	3-8 hrs/wk	8+ hrs/wk

Measurable Outcomes:

- 2 newsletters from SSS, reaching over 100 people through email describing highlights of the project and the timeline
- 1 Stanford Daily article, reaching the entire Stanford population and described the project and its relationship to water conservation
- 1 Presentation for Student Housing on May 28, 2014
- 1 tank of approximately 1500 gallons which will save Stanford that amount of water in addition to all of the money and energy needed for water transport

Project Highlights:

- Getting funded again, and having sights set on the finish line
- Successful conference call that answered everyone's questions
- Daily article
- Installation!

Above- This *1500 gallon rainwater catchment tank will reduce potable water usage at at Synergy House*

Project Challenges and Lessons Learned:

- Hard to inherit pressure of finishing a project that was started so long ago
- Working with the many levels of Stanford administration takes patience, drive, and commitment
- Must be extremely capable with communication and effective communication methods (calls, emails, in-person discussions, Google Docs, etc.)

Expenses to Date:

Item	Cost
1, 1,500 gallon rainwater catchment system, including solar water pump and installation	$5,288
Total Cost	$5,288

Water Bottle Filling Station

Report Authored by Andrew Jacobs, Laura Cussen, and Susie Choi

Project Summary:

The purpose of implementing water bottle filling stations around campus is to reduce the use of single-use plastic water bottles, promote the use of tap water, reduce fossil fuel resource consumption, and lessen Stanford's effects on marine debris. Students for a Sustainable Stanford and the Graduate Student Council wanted to run a pilot program where a water filling station was installed in a heavily-visited area like Old Union and Tresidder Union.

Old Union and Tresidder Union are two of the most trafficked areas on campus because of dining options, meeting rooms, and study spaces; moreover, both undergraduate and graduate students frequently use this space and would utilize a station in this location. After working with building managers and utilities personnel to install the pilot program water filling station, the key components of the project will be outreach, education, and data collection. The installed filling station has an electronic counter so the number of water bottles that have been saved through the use of the station can be tracked. Such data will help determine whether or not the project can be expanded to other areas on campus. Moreover, the team has collaborated with other Students for a Sustainable Stanford groups to communicate the benefits of using the water filling stations and to educate the campus community as to how they can change their daily behaviors to positively impact the environment.

Team Members:

SSS Water Group- Andrew Jacobs and Laura Cussen

Graduate Student Council- Susie Choi and Ashveer Singh

Project Status:

The project is 90% complete. The 10% of the project remaining involves putting a plaque up above the filling station (to describe that the station was established through the Green Fund Program and the collaborative efforts of the GSC and SSS). We are also still collecting data from the electronic counter to see how many people have used the station since its installation. We hope to use this data for future projects, such as future Green Funds to add... (contd on next page)

Above- *Water Bottle Filling Station currently installed on the second floor of Old Union*

Water Bottle Filling Station

Project Status Continued...

these stations in other appropriate areas around campus. One example of this includes installing stations in the engineering quad, especially in Y2E2. We were in contact with the Y2E2 building manager this year, but we could not afford to place two of them on campus in one year. Another feasible idea is to discuss the results of our project with administrators in Residential and Dining Enterprises. These discussions might entice the administrators to install these products in dorms and/or residences that are scheduled to be built.

Project Timeline:

Time Period	Tasks Accomplished
January 2014	• Consulted building managers (Jeanette Smith-Laws) about installing filling stations and receiving approval for project. • Took photographs of possible sites for installation.
End of February 2014	• Determined steps that needed to be taken for installation. • Settled on a water filling station company (Elkay distributor). • Decided which style of hydration station would fit best with the second floor of Old Union.
March-April 2013	• Received estimate from Old Union contractor about exact placement of filling station in Old Union and cost for installation. • Ordered filling station and had it delivered to campus.
May 2013-	• Installed filling station in building. • Promoted filling stations to student body through word of mouth and through a Stanford Daily article. • Continued collection of data, promotional efforts, and signage.

Project Time Commitment:

1-3 hrs/wk	3-8 hrs/wk	8+ hrs/wk

Water Bottle Filling Station

Measurable Outcomes:

- Outreach:
    - Number of newsletters describing the project: 2, to approximately 100 people every quarter with updates about the club and its initiatives
    - Number of newspaper articles: 1, a Stanford Daily article written about the water filling station installation in Old Union and similar sustainability efforts
    - 2 emails distributed to approximately 50 SSS members letting them know about the successful installation and that they should spread the word
    - Plaque: 1 describing the collaborative efforts of student groups with the help of the Green Fund Program
- Number of uses of station: 207

Project Highlights:

- Director of Student Unions stating that she was on board with this proposal
- The installation of the station
- Great teamwork all around
- Daily article

Project Challenges and Lessons Learned:

- Delayed for a year
    - Initially, a water bottle filling station was scheduled to be installed in Hewlett, a large lecture hall on campus. However, for some reason, the contractor's estimate for the location was very much over-budget, so unfortunately the station did not get installed last year
    - The transition of leadership in SSS also made this process difficult, as new leaders are initiated in spring quarter when former leaders go abroad, which is what happened in our case
- Considerable amount of patience is needed when implementing student-led projects
- Finding valid sites and getting in contact with building managers
    - Need to be exact and precise
- Stay persistent with your communication
    - Reminding everyone of their responsibilities through emails, phone calls, in-person conversations, etc.

Water Bottle Filling Station

Expenses to Date:

Item	Cost
Water Bottle Filling Station	$ 1070
Installation Costs	$1930*
Signage	$150**
Total	**$3,000**

*Total installation costs totaled around $6,000. Remainder of costs absorbed by Old Union Management

**Total sign costs totaled around $300. Remainder of costs absorbed by Graduate Student Council

Residential Restroom Composting Pilot

Report Authored by Morgan Abbett and Ariel Bobbett

Project Summary:

The majority of restroom waste in R&DE Student Housing undergraduate residences is comprised of paper towels. These paper towels are compostable, but they are currently sent to a landfill because residences lack the infrastructure to compost them. This month-long pilot project tested a new bin, signage, and education system that installed infrastructure to compost paper towels in three residences: Potter, Adams, and Storey. These residences were chosen because the building mangers were interested in supporting the pilot and because they represented a wide range of undergraduates, from Adams' freshmen and sophomores living in a residence hall to Storey's upperclassmen living in a self-operated row house.

One of the main achievements of the pilot was obtaining metrics that showed the results of the new system. Residents in the participating houses were surveyed before and after the pilot to gain qualitative and quantitative understanding of their paper towel waste habits and their perceptions of the new system. Custodial staff members from each residence were trained to record daily compost and landfill volumes for the duration of the pilot.

Results show that the new system diverted approximately 60% by weight and volume of restroom waste consistently over the month-long trial, which is a significant diversion from landfill. Students submitted highly positive feedback, and 87% of students preferred the new system to the old landfill-only system and. Custodial staff members reported that the new system took a little more time to maintain but not enough to put them behind in their schedules. They also noted that contamination of compost bins with landfill waste was acceptably low. An added benefit was that the addition of compost carts in the waste corral in Potter and Adams allowed the building to downsize its landfill dumpster, resulting in net savings for the building's waste operations. All together, the pilot successfully improved the waste management experience of students and other stakeholders. The suggested next step for Student Housing Sustainability and Conservation Programs is to create a proposal to expand the new restroom waste management system to more, if not all, undergraduate residences.

Above- *Compost bins were piloted in multiple residential restrooms on campus*

Team Members:

R&DE Housing Interns Morgan Abbett and Ariel Bobbett

Residential Restroom Composting Pilot

Project Status:

The project is complete as of June 2014. The student post-survey has been distributed, the bins and signage have been collected, and the custodial staff has been thanked.

Project Timeline:

Time Period	Tasks Accomplished
3/3/2014	Meet with project stakeholders (building managers, staff) about restroom composting pilot
3/10/2014	Receive permission from campus staff to do pilot
3/10/2014	Develop pre- and post-surveys for restroom pilot
4/24/2014	Meet with custodians and Keith for compost training and questions
4/25/2014	Finalize bin system and purchase with vendor
4/25/2014	Order compostable bags
4/30/2014	Introduce plan at house meeting & distribute pre-survey
4/30/2014	Switch out landfill bin in waste corral for compost bin
5/1/2014	Design, print, and laminate final signage
5/1/2014	Request Purchase Order or reimbursement request from Office of Sustainability for bins
5/1/2014	Place new bins and signage in restrooms
5/9/2014	Analyze pre-survey data
5/21/2014	Create Project Report rough draft
5/26/2014	Distribute post-survey for compost projects
5/30/2014	Collect pilot bins and signage; replace with old bins
5/30/2014	Analyze post-survey data
5/30/2014-6/2/2014	Distribute bathroom compost survey incentives
6/4/14	Collect indoor bins and have waste corral compost removed

Project Time Commitment:

1-3 hrs/wk | **3-8 hrs/wk** | 8+ hrs/wk

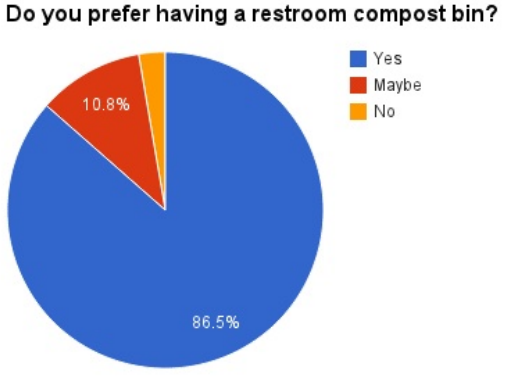
Residential Restroom Composting Pilot

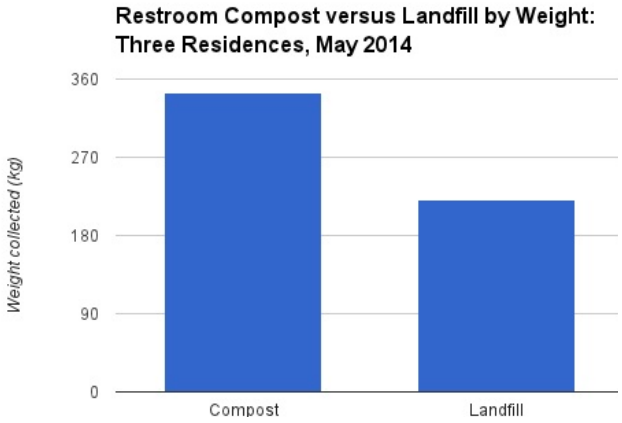
Measurable Outcomes:

- Distributed pre-pilot survey to ~160 undergraduate residents and received 62 responses.
- Installed new two-bin system in 16 bathrooms spread over 3 residences.
- Diverted 350 kg compost from landfill over the two weeks of the pilot, which was equivalent to 60% of total restroom waste generated.
- Distributed pre-pilot survey to ~160 undergraduate residents and received 37 responses.
- Awarded 4 $20 gift cards to survey respondents.
- The pre- and post-pilot surveys gathered information from participants including which items they put in compost and landfill, how well they know how to sort waste, and how well the signage worked.
- An overwhelming 87% of respondents preferred the new bin system with compost to the former landfill-only system. Many cited the reason that if paper towels are compostable, composting them is the right thing to do, and they feel good doing the right thing.

Above- *Unique, personalized signage was developed for pilot project*

- The metrics sheets that custodial staff filled out every time they emptied restroom bins revealed the following data for all three residences summed up over the first two weeks of the pilot:
- This time period was chosen because we had the most frequent data – after two weeks, data recording became less frequent and reliable. Over those initial two weeks, 350 kilograms, or 60% of restroom waste by weight, was composted and diverted from landfill. That is a significant improvement from the 0% composting rate before the pilot.



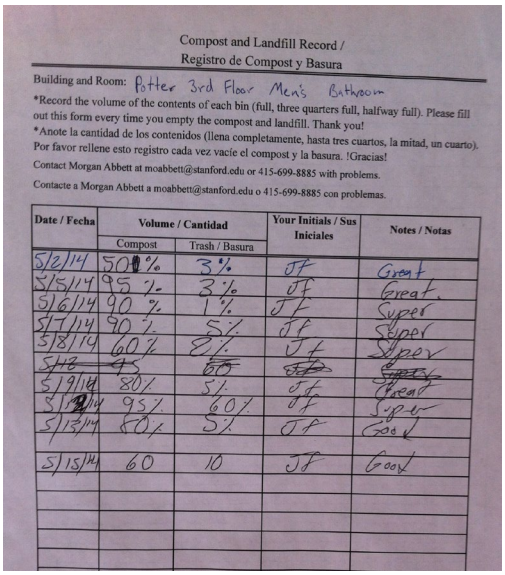


Above right- *Post-pilot feedback survey showed overwhelming support for residential restroom composting*
Above left- *Waste metrics proved that adding compost service actually reduces wastedisposal costs*

Residential Restroom Composting Pilot

Project Highlights:

- Many residents were highly enthusiastic about the project, and it was great hearing their praise and feedback.
- PSSI generously loaned twelve Slim Jim bins to use as landfill bins in the pilot.
- Custodial staff was very helpful in making this pilot happen, especially when it came to recording metrics. One especially enthusiastic staff member recorded the following highly specific bin volumes and positive comments on a restroom record sheet:



Compost and Landfill Record /
Registro de Compost y Basura

Building and Room: Potter 3rd Floor Men's Bathroom

*Record the volume of the contents of each bin (full, three quarters full, halfway full). Please fill out this form every time you empty the compost and landfill. Thank you!
*Anote la cantidad de los contenidos (llena completamente, hasta tres cuartos, la mitad, un cuarto). Por favor rellene esto registro cada vez vacíe el compost y la basura. !Gracias!

Contact Morgan Abbett at moabbett@stanford.edu or 415-699-8885 with problems.
Contacte a Morgan Abbett a moabbett@stanford.edu o 415-699-8885 con problemas.

Date / Fecha	Volume / Cantidad		Your Initials / Sus Iniciales	Notes / Notas
	Compost	Trash / Basura		
5/2/14	50%	3%	JF	Great
5/5/14	95%	3%	JF	Great
5/6/14	90%	1%	JF	Super
5/7/14	90%	5%	JF	Super
5/8/14	60%	8%	JF	Super
5/9/14	45	60	JF	Super
5/12/14	80%	5%	JF	Great
5/13/14	95%	60%	JF	Super
5/14/14	80%	5%	JF	Good
5/15/14	60	10	JF	Good

Above- *Custodial staff recorded use of compost bins on a daily basis*

Project Challenges and Lessons Learned:

- Bin selection: Choosing the best bins took some time and research. Restrooms are small but require enough waste bin volume to prevent overflow. Building managers required bins that looked aesthetically acceptable. The team found that the standardized 16-gallon Slim Jim bins were the best option to suit all size and aesthetic needs. It was found that the ability to label the Slim Jim bin lids was important, as signage on the wall was not always easy enough for residents to see. Additionally, the Slim Jim bins are recognizable from elsewhere on campus.
- Bin installation: Installing the Slim Jim bins was time consuming and a bit physically challenging. Bins for Potter and Adams were delivered to the Housing Front Desk, a fair walk from the residences. Transporting the bins to the residences and up the stairs with only two people was draining. Next time, have bins delivered right to the house of interest and try to get extra assistance for the installation process.
- Language barrier: There was a minor language barrier between Morgan and Ariel, who spoke only a little Spanish, and the Adams and Potter custodial staff, who were primarily Spanish speakers only. In meetings, a custodial staff member translated for us, and printed metrics sheets in every restroom in English and in Spanish, solving the language challenge.
- Bin placement: Sometimes bins were not returned to their correct places under the corresponding signage after they were emptied, causing confusion for residents. This issue was presented to custodial staff members, who fixed the problem.
- Signage: Survey feedback from residents showed that signage could be even clearer, simpler, and easier to read. As this project continues, signage fonts should be made larger and less verbiage should be used. Another challenge was that the signage was laminated using a material that did not adhere to painter's tape well, so many of the signs fell down. Make sure to use hot lamination to protect signage, as that plastic sticks better to tape.
- In the future, it is recommended that both compost and landfill bins have lids (brown for compost, black or grey for landfill) and that the on-bin signage be clear, large, and simple (for example, post only "Compost Paper Towels" in large letters on the compost lid).
- Metrics recording: After two weeks, some custodial staff members recorded metrics less frequently and less reliably. This change may have happened because we, the project administrators, did not meet with custodial staff during the pilot, only before and after. Next time, meet with custodial staff often, maybe weekly, to check in, hear feedback, and express gratitude for the favor they are doing by maintaining records.

Residential Restroom Composting Pilot

Expenses to Date:

Item	Cost
12 Slim Jim 16-gal bins with brown compost lids	$1000.00
360 BioBag compostable liners for 16-gal bins	$125.00
4 Gift cards- survey incentives	$80
Total	**$925.00**

The Green Cleaning Initiative

Report Authored by Taylor Streaty and Kimberly Chang-Haines

Project Summary:

This project introduced a sustainable cleaning system to reduce usage of chemical cleaning substances in Columbae, a co-operative residence at Stanford University. The project also educated students about sustainable cleaning. The Tersano Lotus Pro cleaning system turns tap water into an aqueous ozone cleaning solvent. Students for a Sustainable Stanford chose to implement a pilot program to measure the impacts and effectiveness of the Lotus system before proceeding with a larger-scale project.

A trial run was implemented in Columbae's bathrooms for two weeks. Before the project, both residents and the cleaning crew were surveyed to determine their thoughts about green cleaning and its effectiveness. They were also surveyed after the trial run completed to see how their views changed.

Team Members:

SSS Water Group- Andrew Jacobs, Laura Cussen, Kimberly Chang-Haines, Taylor Streaty,

Project Status:

The project is complete. Pre and post-survey data has been analyzed and final recommendations have been made to R&DE.

Above- *Columbae residents prepare to use aqueous ozone cleaning system for the first time.*

The Green Cleaning Initiative

Project Timeline:

Time Period	Tasks Accomplished
1/17/14	Received permission from campus staff
2/10/14	Developed pre- and post-surveys
2/17/14	Bought 1st Tersano Lotus Sanitizing System
3/31/14	Bought 2nd Tersano Lotus Sanitizing System
3/31/14	Distributed pre-survey
4/7/14	Attended Columbae House meeting
4/13/14	Attended Columbae House meeting
4/14/14	Analyzed pre-survey data
4/16/14	Installed technology and started pilot
4/27/14	Ended pilot
4/28/14	Distributed post-survey
5/16/14	Started petri dish experiment
5/23/14	Ended petri dish experiment
5/23/14	Analyzed post-survey

Project Time Commitment:

1-3 hrs/wk | **3-8 hrs/wk** | 8+ hrs/wk

Measurable Outcomes:

- Pre-Survey: Distributed to roughly 50 students and received 31 responses. A majority of residents believed that the aqueous ozone cleaner would be as effective as a standard cleaner. In addition, the factors most important to residents when considering a cleaner are effectiveness and environmental impact. Most people are satisfied or neutral about the cleaner that Columbae currently uses
- Post-survey: Distributed to roughly 50 students and received 19 responses. A majority of residents found the aqueous ozone cleaner to be as effective as a standard cleaner. In addition, residents were either neutral or somewhat satisfied with the Lotus pro. With regards to the bathroom crew responses, they thought that the product was difficult to use. This could be remedied by the use of a more industrial machine that can convert the aqueous ozone for a longer amount of time
- Featured in 2 newsletters that reached approximately 100 readers
- Featured in the Stanford Daily that reached the entire Stanford community. Additionally, the article was on the Stanford Daily website and has received 55 likes on Facebook and 8 retweets on Twitter
- Had booths at two sustainability festivals that totaled 1600+ attendees together

The Green Cleaning Initiative

Project Highlights:

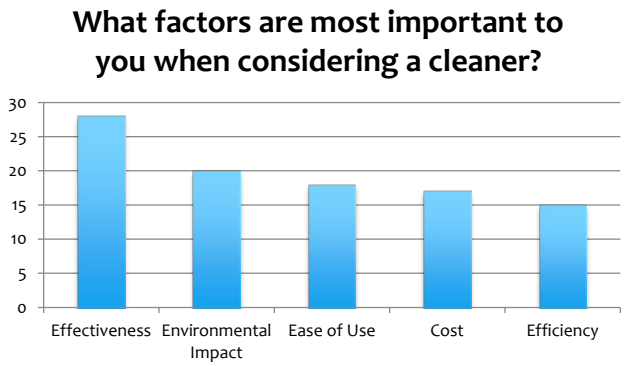
- Unboxing the Lotus Pro machines for the first time
- Ordering the petri dishes and using them for experiments
- Receiving over 30 responses for the pre-survey
- Seeing a newspaper article in the Stanford Daily highlighting the Green Cleaning Initiative
- Having booths at Celebrating Sustainability and SolPlay Field Day

Project Challenges and Lessons Learned:

- One of the Lotus Pro machines did not work. This created problems for the cleaning crew because they were only able to use one machine at a time, making the process less efficient
- Coordinating with Columbae was difficult. They have four different bathroom clean crews, so we were forced to train them on the machines via email correspondence. Although emails worked, it would have been better to have face-to-face training

Expenses to Date:

Item	Cost
2 Tersano Lotus LBU100 Sanitizing Systems	$383.90
10 Petri Dishes	$820.90
House Gift	$150
Total Cost	$554.80



Above- *Pre-pilot survey data showed majority of students were open to trying environmentally-friendly cleaning products*

Climate Week @ GSB

Report Authored by Sam Grausz

Project Summary:

The first annual Climate Week aimed to involve Graduate School of Business (GSB) students in better understanding climate risks and opportunities for business, and to give GSB students a chance to take action. From April 14 - April 18, the group hosted a series of events highlighting the ways in which climate change is changing our basic notions of how business is and will be done. GSB students were called upon to take action by contributing to projects around the world that reduce carbon emissions and thereby combat some of our community's impact on the climate. Through these events and actions, the organizers hoped to inform more GSB students about climate change and the many ways in which we can all help make a difference

Team Members:

Brooks Barron, Drew Fleeter, Jen Wang, Kirsten Stasio, Meg Starr, Nandi Chhabra, Sam Grausz, Victoria Beasley, Whitney Skinner

Project Status:

The work is complete. Events were held as planned from April 14 – April 18. Following that week, a series of meetings were held to reflect on what worked well and what did not.

Project Timeline:

Time Period	Tasks Accomplished
Early December	Developed idea and applied for Green Fund support
Early January	Project approval by the Green Fund
Late January	Completed general outline of events, recruited additional team members, and divided responsibilities
Late February	Formalized plan of events, developed marketing plan, recruited speakers, conducted climate change survey
Late March	Completed logo and marketing materials, advertised event, and made final preparations for the week
April 14-18	Hosted Climate Week events
May	Held follow up meetings with Climate Week team, students interested in climate change, and Stanford Administrative supporters. Began planning for next year's activities

Climate Week @ GSB

Project Time Commitment:

1-3 hrs/wk	3-8 hrs/wk	8+ hrs/wk

(1-3 for each team member, 8+ across the whole team)

Measurable Outcomes:

- Survey data was collected prior to the events of Climate Week to identify: student beliefs and knowledge about the environment and climate change, interest in taking personal action, and opinions about tjhe need for U.S. businesses to address climate change
- About 13% (108 responses) of the current MBA1 and MBA2 cohorts responded, providing valuable baseline data (more details can be provided upon request), as well as comparisons to national survey data (Krosnick, 2012) and survey responses from global CEOs on the topic of sustainability
- Published notice in the AASHE bulletin that was seen by 11,000 readers
- The Climate Week website had 2,300 page views by 2,200 unique visitors.
- Reached over 750 people through 11 events
- Educated much of the Stanford GSB student, faculty, and administrative body about climate change through advertisements
- Enabled 26 people to offsett 178 metric tonnes of CO2 emissions

Project Highlights:

- Seeing climate change be a center of student attention at the GSB for a week
- Having many students thank our team members for helping to put on this event
- Enabling 26 students to take action against climate change through offset investments
- Talking to many students over coffee and bagels and later happy hour drinks about climate change
- Seeing many students learn about latest developments in renewable energy and sustainable technology from Cathy Zoi and Stefan Heck and the importance of action on climate change from George Shultz speak about the importance of climate change
- Seeing our team members inspired and motivated to help others take action on climate change

Above- *GSB Students touring the new Stanford Energy Systems Innovations (SESI) Central Plant*

Climate Week @ GSB

Project Challenges and Lessons Learned:

- Many GSB students interested in and concerned by climate change, but fewer prioritize the issue enough to attend events on the subject and even fewer want to take action
- Very few GSB students actively dispute the validity of human caused climate change
- Monetary asks, such as our encouragement to invest in offsets, require a concerted and well-organized sales effort
- Food is very effective in bringing in large crowds; high profile speakers alone cannot always attract audiences
- When collaborating with others to host events, our team needs to exercise greater oversight to ensure the quality of events
- Advertisements for individual events, rather than for multiple events, are more effective in attracting attention
- When selecting incentives/prizes to generate student participation, our team focused on experiences and products consistent with our overall theme, including companies with sustainable business practices and objectives. In addition to these criteria, one should also focus on incentives/prizes that minimize risk to Stanford, should an accident occur as a result of the experience/product. The Climate Week team engaged with Diana Haven in the University Office of risk management fairly late in our process, which resulted in some last minute scrambling to get our prizes approved. The Center for Social Innovation ended up stepping in and helping us get approval from the University. In the future, we would engaged with the University Office of Risk Management earlier

Above- *Climate Week signage was posted around the Knight Management Center leading up to events*

Expenses to Date:

Item	Cost
Survey Incentives- Raffle Prize Gift Cards	$300
Food for Events	$853.76
Event Games and Decorations	$124.55
Thank You Gifts for Speakers	$136
Total Cost	$1,414.85

(Actual Cost for Climate Week- $1671. We received supplemental funding from the Emmett Interdisciplinary Program on Energy and Resources (EIPER) to cover the difference.)

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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