

Cardinal Green

VOLUME 7
SPRING 2010

The Sustainable Stanford Quarterly Newsletter



In this issue...

Summary	1
CEE/ES 109 Wrap-Up	1
Welcome Jiffy Vermilyen	2
Green Fund Project Updates	3
Parents' Sustainable Weekend	3
Stanford Students in Copenhagen	4
Sustainable Dining: Zero Waste	5
Student Story: Conservation Cup	6
Energy Savings Projects	6
Building Temperature Controls	7
RecycleMania	8

In This Issue

The rainy winter did not dampen any action in the Office of Sustainability! The CEE/ES 109: Green Buildings and Behavior course launched, a former Stanford student returned to The Farm as our new Sustainability Coordinator, Princeton Review acknowledged Stanford's sustainability efforts, Parents' Weekend offered a full sustainability tour, all building managers were introduced to the [Building Level Sustainability Program \(BLSP\)](#), and Dr. Steven Chu addressed energy revolution.

As spring blooms around campus, so does our momentum. We will capitalize on the exciting developments of winter quarter and dive headlong into external evaluation season and our new BLSP interventions. Our new Sustainability Coordinator, Jiffy Vermilyen, will be joined by Student Sustainability Coordinators selected from the successful CEE/ES 109: Green Buildings and Behavior course who demonstrated particular aptitude and commitment during the quarter. Their immediate target will be to expand BLSP efforts that began as term projects in the Braun and Mitchell buildings.

Enjoy this issue and please send us your comments and feedback. As always, our website <http://sustainable.stanford.edu> remains your best resource for news and information.

Fahmida Ahmed

Office of Sustainability

CEE/ES 109 Wrap-Up

by Jiffy Vermilyen, SEM Sustainability Coordinator

CEE/ES 109 Green Buildings and Behavior, a course made possible through collaborative effort between the Office of Sustainability and the Woods Institute for the Environment, concluded in March. The course aimed to engage students in Stanford's sustainability, and featured more than 20 academic faculty and staff who lectured on topics including energy efficiency, water use, waste management, sustainable food, and transportation systems. The 12 undergraduates completed audits for two School of Earth Sciences buildings, Mitchell and Braun, which represent the fourth



Eli Pollak, one of twelve undergrads to complete the course

continued on page 2

For submissions contact:

Elsa Baez - elsab@stanford.edu

Jiffy Vermilyen - jiffy.vermylen@stanford.edu

Fahmida Ahmed - fahmida@stanford.edu

<http://sustainable.stanford.edu>

continued from page 1

and fifth campus buildings of 60 scheduled to undergo the efficiency interventions targeted by the Building Level Sustainability Program. During the spring and summer, select class participants will capitalize on the course's momentum and join the Office of Sustainability as Student Sustainability Coordinators to help further deploy the BLSP.

Refer to the Stanford Bulletin for future CEE/ES 109 offerings. For the full program report, visit http://sustainable.stanford.edu/buildings_initiatives.

Sustainability Coordinator Joins Office of Sustainability

by Fahmida Ahmed, Associate Director, Sustainability and Energy Management

Jiffy Vermynen joined Stanford University's Office of Sustainability in March 2010 to support further development and implementation of campus-wide Sustainable Stanford initiatives. Her portfolio includes rollouts of the department/building level conservation programs, related communications and training to the campus community, and overall program evaluation, especially for the built environment.

Before joining Stanford, Jiffy served as a Senior Project Engineer for DPR Construction, Inc. Project highlights include a mission-critical data center in Oakland, CA and an LEED-CI Silver tenant improvement for VISA International in San Francisco, CA. She led Bay Area LEED-AP training courses, served on the company's innovation working group, and volunteered as Construction Captain for the annual Rebuilding Together Peninsula project. Jiffy also instructed CEE 248G: Measuring Sustainability at Stanford in the spring of 2009.

Jiffy earned an M.S. in Structural Engineering and Geomechanics at Stanford University in 2006, and a B.S.E. in Civil and Environmental Engineering from Princeton University in 2005 where she also received certificates in Architecture and American Studies.

Ensuring future generations can experience the same natural environment is Jiffy's motivation and the basis for her commitment to sustainability. Jiffy's office is located in the Sustainability and Energy Management department at 340 Bonair Siding. To contact Jiffy, use (650) 721-2718 or jiffy.vermylen@stanford.edu.



Jiffy Vermynen,
Sustainability Coordinator, Office of Sustainability

Evaluation Season Results Begin

The U.S. Green Building Council (USGBC) and The Princeton Review surveyed 2000 schools this year and selected 285, Stanford included, as a part of their Green Honor Roll. This assessment replaces their former Green Honor Roll featuring schools with the top 15 Green Ratings based on a survey with only a few questions. Stanford's Energy and Climate Plan, A Student's Guide to Sustainable Living, and the CEE/ES 109 Green Buildings and Behavior course were a few of the new items highlighted this year. Winners will be listed as a sustainable campus in the organizations' new green college guide book and earth week publications. Specific results will be formally announced in April by the USGBC and Princeton Review. Stay tuned!

Chu Inspires Energy Revolution



U.S. Secretary of Energy, and Professor Emeritus of Physics, Steven Chu, delivered an inspiring and entertaining keynote speech entitled, "Meeting the Energy and Climate Challenge," on March 8th, 2010. In front of the capacity crowd at the [GAIA](#)-hosted event, Chu urged Stanford and the nation, "to lead the world in a new industrial revolution," a clean energy revolution. Chu explained his vision for a successful energy bill and reminded Stanford of its historical role in innovation. To stay ahead, Chu matter-of-factly explained "we have to get moving." For more details and access to the complete lecture, please visit [Stanford News](#).

Green Fund Sprig (plugVIEW) and Water Catchment System

by Jiffy Vermeylen, SEM Sustainability Coordinator

Team members from Green Fund projects Sprig (plugVIEW) and the Water Catchment System presented updates at the March Sustainability Working Group meeting.

On February 15th, the Sprig team of Kevin Mori, Ben Kallman, and Matt Crowley unveiled an online dashboard and lighting competition for the third floor of Donner. The dashboard refreshes every ten seconds and provides real-time electricity usage data, showing residents instantly where they rank relative to hall mates.



Screenshot of the Sprig (plugVIEW) online dashboard

Sprig continues to work on a custom meter design, for which the team has selected the development platform and core components. Prototyping will begin this quarter. Further work on the backend allowed system support of multiple dorms and houses, and the group remains committed to development of an intuitive and universal user communication tool for real-time electrical metering.

In January, the Students for a Sustainable Stanford Water Catchment System joined Synergy's garden manager, Nick Wenner, to install their first system in the Synergy compost area. The project required construction of compost bins, welding together and attaching gutters to the compost roof, constructing a drain to retain sediment, and digging ditches for the barrels and piping. The final design directs rain water from the 60 square-foot roof through slanted gutters to the 55-gallon catchment barrels. This water will help Nick maintain the compost during the upcoming dry season, replacing his previous use of potable water.



Students working on Synergy's water catchment system



Water catchment system installed at Synergy's compost site

The group will showcase a demo version of their system at this year's EarthWeek events in White Plaza.

For more information about the 2009-2010 Green Fund project winners, visit http://sustainable.stanford.edu/green_fund.

Sustainability Featured at Parents' Weekend

by Elsa Baez and Jiffy Vermeylen

The Marguerite's new diesel-electric hybrid bus transported Stanford parents around The Farm for a first-hand look at Sustainable Stanford in action. The February Parents' Weekend tour aimed to immerse parents in the campus sustainability experience, and was the second such event coordinated by the Office of Sustainability. Highlights included presentations from staff strategically



Stanford Parents in the Y2E2 red atria with SEM Associate Director Fahmida Ahmed (center)

placed to showcase their operations, specifically Parking and Transportation, the University Architect and Planning Office, the Stanford Recycling Center, Stanford Dining, and the Office of Sustainability. At the conclusion of the tour, parents expressed enthusiasm for Stanford's programs and leadership, as well as the university's commitment to sustainability. Stay tuned for future Sustainable Stanford tour offerings!

Tours are available at all special events. For more information, contact Elsa Baez, Office of Sustainability Staff Assistant, at elsab@stanford.edu.

Student Story: Students Experience Climate Policy in Action at Copenhagen Conference

by Heather Benz, '10

Over 50 Stanford students witnessed climate policy in action at the UN Climate Change Conference in Copenhagen, Denmark last December. The students, accompanied by Stanford professors Stephen Schneider and Terry Root, received observer passes to the negotiations. The undergraduate and graduate participants prepared for the trip through a quarter-long class that outlined the roles of various stakeholders, including a group simulation of the talks. Students returned from the trip with mixed feelings about the process, but with plenty of unique knowledge. "I'm very glad I went... I think being there is automatically different from just reading about it in the news," commented Kevan Christensen '10. He found the talks frustrating, but explained that the experience, "emphasized the need for doing things at home in the U.S. because the U.S. has such leverage on an international scale." Sabine Bergmann '10 recalled meeting California's Governor Arnold Schwarzenegger as a favorite moment of the trip. She mirrored Christensen's feelings of frustration about the negotiation process but pointed out that "it motivated a lot of people to come back to Stanford and try to do something." All students concluded that visiting Copenhagen was an illuminating experience, and one made possible only by being at Stanford.



From right, Stanford students Sabine Bergmann, Kevan Christensen, and John Bartz with Governor Arnold Schwarzenegger in Copenhagen

Survey Results Unveiled at Building Manager's Meeting

In January, more than a third of Stanford's building managers responded to a survey targeting sustainable opportunities at the individual building level. The Office of Sustainability teamed with the BGM Zones team to compile the results and discovered several training opportunities in the process. Accordingly, representatives from water conservation, IT, and sustainable food systems facilitated a panel presentation at this year's Building Manager's Meeting.



Speakers also publicized pilot results from the Building Level Sustainability Program, which will further expand this year. To see all the presentations, visit the [BGM website](#).

Sun Chips Launch Compostable Packaging

Chip bags have long posted a waste disposal challenge. Typically made from petroleum by-products, these bags were previously unable to be recycled or composted.

On Earth Day 2010, Sun Chips, a Frito-Lay brand, will change packaging history and unveil a 100% compostable chip bag.



The company spent four years researching and developing the material technology, which ultimately derives from plants.

Visit the [Sun Chips website](#) for a cool video of the degradation and more detailed information on the development of their new bag.

ASSU Executive, SSS, and Stanford Hospitality & Auxiliaries Launch 0% Waste Program

Story contributed by Matt Rothe, Sustainability Food Programs Coordinator, Stanford Dining Services

The ASSU Executive Sustainability team is pleased to announce that, through collaboration with Students for a Sustainable Stanford (SSS) and Stanford Hospitality and Auxiliaries (SHA), three campus dining locations are now 0% waste areas. New compost bins are in place at Union Square in Tresidder, The Axe & Palm, and the new Russo Café in Munger. These three facilities are now using compostable and recyclable materials. The compost bins are accompanied by recycling bins for glass, plastics, and paper, as well as signs to help diners sort waste into the appropriate receptacles. To support the ongoing success of the program, SSS is training eight Student Compost Coordinators to perform bi-weekly compost audits. The ASSU Executive Sustainability team is now working with CoHo, Treehouse, and Ray's to expand the program.



Recycle and compost bins inside The Axe & Palm

ASSU President David Gobaud said, “This is a tremendous accomplishment. Making these dining areas 0% waste has been a priority of mine for a long time; it was on the platform last spring, I campaigned on the issue, and I’m extremely proud that we were able to get it done. Beyond the environmental impact of this change, we believe it sends a very strong message about the commitment of Stanford—and Stanford Hospitality and Auxiliaries in particular—to operate in a sustainable manner. Our Sustainability team, SSS, and SHA did an amazing job with this project.”

Matt Rothe, SHA’s Sustainability Coordinator said, “We are very pleased to be taking the lead on the zero waste initiative in our dining establishments. This is a key part of our Sustainable Food Program and we look forward to continuing our strategic partnerships with the ASSU and Students for a Sustainable Stanford in our ongoing effort to create more sustainable future on campus.”

Composting bins were introduced in Tresidder several years ago but were removed because they were regularly contaminated with non-compostable materials. The composting disposal service that Stanford used charged a fine for such contamination and as a result, the program was suspended. Steps are being taken to ensure that this problem does not occur again. In addition to informative signs and clearly labeled bins, the ASSU Executive Sustainability team will collaborate with SSS on educational and outreach initiatives for the project—such as recruiting volunteers to stand near bins and help visitors properly dispose of their items.

“I am very excited about this program. Not only does it make our campus more sustainable, but it gets students engaged and invested in the project themselves which will contribute to its overall success”, said ASSU Executive Co-Chair of Sustainability Leslie Cachola.

For more information, contact Matt Rothe, Stanford Dining Sustainability Coordinator, at mrothe@stanford.edu.

Student Story: Conservation Cup

by Heather Benz, '10

Stanford's annual Conservation Cup, an energy and water saving competition between campus residences, is in full swing. The quarter-long competition pits dorms and houses against each other in categories of per capita energy and water use, as well as the greatest percent reduction in aggregate use from previous years. This year's competition featured an expanded kick-off event in White Plaza and continual encouragement by the Green Living Coordinators, student representatives living in each residence. One challenge the competition faces is the delay in data reporting. "It's really hard to get feedback for the actual amount of electricity and water being used," explains Green Living Council president Kevan Christensen. "Ideally we could send information every week to the dorms so they can know how they are doing. As a substitute we are providing four biweekly challenges." The new conservation challenges focus on different aspects of sustainability, such as showers or laundry. Students can visit the website set up for interactive feedback, where they can report actions they have taken and see how many students from each dorm are participating. "We are trying to engage people on a more frequent basis," Christensen notes.



Visit glc.stanford.edu to track this year's Conservation Cup.

Energy Saving Projects Underway

by Julie Hardin-Stauter, Associate Director, Zones Management Administration

The Zone Management Group within Land, Buildings & Real Estate established a goal to implement energy conservation projects in 2009 and 2010 that will save at least \$1.4M a year in energy costs after all projects are completed. The projects will reduce energy consumption for electricity, steam, and chilled water.

In 2009, 40 energy saving projects resulted in a savings of approximately \$500,000. In 2010, the plan is to complete 59 additional projects with an estimated savings of \$900,000.

The types of projects are quite diverse and vary in complexity:

- Fluorescent lighting upgrades to a more energy efficient lamp and ballast system
- Motion sensor lighting control additions
- Revised operational time schedules for HVAC systems
- Replacement of inefficient HVAC equipment

In addition to the reduction in energy costs, Stanford also received a \$40,000 rebate from PG&E in 2009, with an additional rebate anticipated in the amount of \$50,000 in 2010. Many groups, such as Sustainability and Energy Management and Buildings and Grounds Maintenance, have provided guidance and support for these tasks and will continue to work hard to meet Stanford's savings goal of \$1.4M by the end of August 2010.

For more information about these projects, contact Julie Hardin-Stauter, Associate Director, Zones Management Administration, at jhardin@stanford.edu.

Increase Your Green Fluency

PUE = Power Usage Effectiveness

A common data center efficiency metric developed by The Green Grid, PUE measures the ratio of total facility power to IT equipment power. The total facility power includes cooling and air distribution equipment, as well as power distribution and backup. The IT equipment power refers to the power provided to actual devices, like servers, housed in the data center. State-of-the-art facilities have PUEs around 1.2 while inefficient facilities have PUEs greater than 2 (for every watt used by the IT equipment, another watt is required to cool and power the facility).

Visit [The Green Grid](http://TheGreenGrid.org) for more information on data centers and efficiency metrics.

Satellite Server Room Efficiency Measures in Progress

A comprehensive inventory of 'Satellite Server Rooms' across campus revealed five different cooling types. Sustainable IT selected one room exemplifying each system for more in-depth analysis.



When adjusted for infrastructure and IT load, room design and management translated into energy use disparities of more than 100% between the most efficient (PUE = 1.27) and least efficient (PUE = 2.94) spaces. Using incentive funds from PG&E to defray infrastructure costs, local IT and facility teams are currently implementing energy saving strategies. In our next issue, we will detail results and savings.

Improved Temperature Control Reduces Energy Costs

by Julie Hardin-Stauter, Associate Director, Zones Management Administration

Stanford is exploring many options to increase energy efficiency and reduce energy expenditures on campus. One option focuses on keeping the indoor building temperature between 68° F and 78° F in air-conditioned buildings. To test this idea, the team drafted an Indoor Temperature Policy (ITP) for air-conditioned buildings. The benefits of the ITP range include:

- Reduced energy costs of \$1 million to \$1.4 million per year
- Reduced energy use and associated greenhouse gas emissions
- Consistency of work space temperatures across campus



In May 2009, four buildings were selected to participate in a pilot program: 333 Bonair Siding, Gates, Durand, and Moore. Each building houses varied room types, including offices, IT server rooms, classrooms, wet and dry labs, and computer labs.

Although the recommended temperature range in office areas is 68° F – 78° F, Buildings and Grounds Maintenance engineers and technicians worked with the Building Managers to identify temperature requirements for special use areas and modified the range for those spaces accordingly.

A 50% reduction of natural gas use was observed at 333 Bonair, saving \$2,700 per year. Moore steam savings calculated to 36.44%, or \$65 per day during the pilot program; a similar savings for chilled water is expected this summer. Calculating the chilled water dollar savings and assuming cold weather steam dollar savings will be equivalent, Gates savings will be \$17,836 per year. Durand annual savings were \$27,805. It is expected that similar results can be obtained in other buildings.

The pilot results were encouraging and the program expanded to include Keck, Chemical Biology, Stauffer I and II, EH&S, Building 300, Jordan Hall, Mechanical Engineering labs and shops, Barnum Center, Terman Engineering Lab, Mechanical Engineering, Building 524, Mechanical Engineering Administration, Blume Earthquake Center, Varian Physics, Y2E2 (lab and basement offices), and construction trailers. Energy use data is being gathered and analyzed currently.

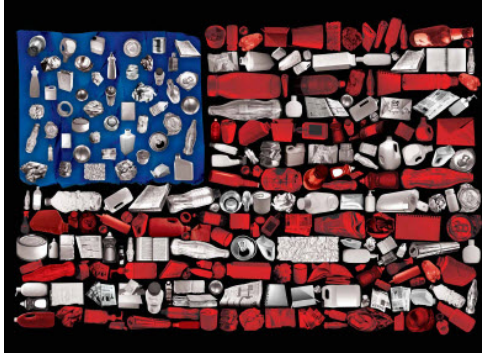
Reactions from Building Managers and occupants have been mostly favorable. Building Manager Jetta Tatom describes how the process was received for the Y2E2 first, second, and third floor offices, "I believe the occupants of this building are proud to assist in helping with this initiative. Y2E2 is a 160,000 square foot building and it takes a lot of energy to supply the infrastructure within, but with the assistance of everyone who resides in this building we are succeeding at reducing our energy usage. Sometimes being a little too cold or a little too warm is worth the end result; and when our personal temperatures can be adjusted by adding a layer of clothing or being able to peel off a layer, that personal sacrifice does achieve a positive result." Utility use data indicates these changes will save approximately \$30,000 per year at Y2E2.

Thanks to the participants for their support of this worthwhile program. For more information, please contact Khoa Hoang , Zone A Manager, BGM, at khoah@stanford.edu.

RecycleMania

by Julie Muir, PSSI Operations Manager

Once again, Stanford University has entered RecycleMania, a nationwide recycling contest among 575 colleges and universities. From January 17 through March 27, Stanford will be in a “fierce but friendly” competition with its Ivy League, PAC 10, and California counterparts to see who can recycle the most and landfill the least. Stanford will be collecting the weights of its trash and recycling (paper, cardboard, bottles and cans, and food waste) each week and reporting to RecycleMania.



Help Stanford rank highly by recycling all paper, corrugated cardboard boxes, bottles and cans, and other items from the [acceptable recyclables](#) list on our website. Pay special attention to what is thrown in the garbage! Be sure these items are not reusable or recyclable. Throwing away reusable or recyclable items will count against Stanford in the competition!

For a complete list of what Stanford recycles, visit the PSSI website at: http://recycling.stanford.edu/recycling/Stanford_Recycling_Flyer.pdf.

- **All paper (white, colored, news, books, junk mail, envelopes) — if it tears, it recycles!**
- **Shredded paper (bagged, please)**
- **Cardboard**
- **Plastic bags, bubblewrap, shrinkwrap, (place all in one bag and place bag in the MIXED PAPER bin)**
- **All plastics #1 PETE and #2 HDPE**
- **Plastic #3-7 bottles**
- **Aluminum cans/aluminum foil/scrap aluminum**
- **Steel cans/scrap metal**
- **Glass bottles and jars**
- **Food waste (where available)**

Check out the list of colleges and universities participating in the competition: <http://www.recyclemaniacs.org/universities.asp>

Contact Julie Muir, PSSI Operations Manager, at (650) 321-3246 or email juliem@pssi.stanford.edu with any RecycleMania questions.



Week 9 Results

In week 9, here are Stanford's national standings:

Most Recyclables (Gorilla) - #3 out of 346 schools
Harvard is beating us by 50 tons!

Food Composted - #7 out of 123 schools

Paper Recycled - #9 out of 222 schools

Bottles and Cans Recycled - #18 out of 224 schools

Cardboard Recycled - #18 out of 231 schools

Per Capita Recycling - #22 out of 346 schools

Waste Minimization - #191 out of 200 schools

Grand Champion (Combining Per Capita Recycling with Waste Minimization) - #115 out of 266 schools

Final results will be publicly announced on Friday, April 16th, 2010. Stay tuned!

For related campus Sustainability news:

- Woods Institute: [Woods Institute Newsletter](#)
- BGM: [Building Management eNewsletter](#)
- E-IPER: [E-IPER Newsletters](#)