## Campus Sustainability Report



## October 2012

Committed to Improvement



### **ACKNOWLEDGMENTS**

The Office of Sustainability would like to recognize all of those who contributed to this Report, while acknowledging that any errors or omissions remain our responsibility. The Report would not be possible without the data generated by Kira Stoll and the many others who have compiled the CaICAP inventories.

Thanks to the following for their contributions to the writing and data collection of this report and to those who provided up-to-date information on projects and initiatives (either to the Office of Sustainability or to TGIF), reviewed the document and provided input and comments:

Andre Adao Kaya Allan Sugerman Eric Andersen Rachel Balmy Alex Butler Nicole Campbell Judy Chess Cathy Cockrell Nik Crain Erika Donald Kelley Doyle Kelley Etherington Morgan Fabian Erin Fenley Zara Fernandez

Mariah Gonzalez Annie Gorden Jim Horner Melanie Hurley Gary Imazumi Kay Ingle Maia Kapur Jeffrey Kessel Lin King Kimberly Lam Mike Laux Patrick Macardle Sandy Macasieb Jennifer McDougall Lisa McNeilly Carol Ness Claire Porter Kristen Rasmussen Trish Ratto William Riggs Eric Robinson Ida Shen Sara Shirazi Kira Stoll Anna Szendrenyi Katherine Walsh Kimberli Williams Seamus Wilmot

## ABOUT the OFFICE of SUSTAINABILITY

The UC Berkeley Office of Sustainability develops, coordinates, and supports campus sustainability goals and initiatives with a focus on climate action. Our goals include fostering a culture of sustainability and helping the campus reach climate neutrality. We strive for excellence in breadth and depth, by implementing bright green programs to reduce our ecological footprint, the myPower campaign to permanently reduce energy use on campus, raising awareness through our Talking Louder campaign, and emphasizing transparency and accountability through our plans and reports.

To find out more about current sustainability efforts on campus, visit sustainability.berkeley.edu, email the Office of Sustainability at sustainability@berkeley.edu or sign up for the Bright Green News.

sus.tain'a.bil'i.ty n.

the ability to meet the needs of the present while living within the carrying capacity of supporting ecosystems and without compromising the ability of future generations to meet their own needs

> Chancellor's Advisory Committee on Sustainability



## Campus Sustainability Report

## 2012

Director's Message 4–5 Snapshots of Sustainability 6–7 Across Campus 8–9 **Energy and Climate** 10-13 Water 14–15 **Built Environment** 16-17 Waste 18–21 Purchasing 22-23 Transportation 24-27 Food & Housing 28–31 Land Use 32-33 Academics & Learning by Doing 34-35

Metrics & Goals 36–42

INDEX



## Campus Sustainability Report



There are a number of reasons why UC Berkeley takes time every year to compile and share its annual sustainability report. First and foremost is the desire to be **accountable** for making progress toward our sustainability and environmental goals. We have published five previous assessments of our progress and are committed to sharing our Sustainability Metrics annually.

To give these reports credibility, we follow common reporting principles. Our reports aim to be transparent and complete, covering our main areas of environmental impact, and including both positive and unfavorable results. We strive for accuracy and conformity to protocols so that metrics can be compared over time and to others. In many areas, our metrics are third-party verified, are generated by the University of California (UC) Office of the President, or are developed in accordance with UC system-wide standards and policies. We seek clarity in our reports, so that stakeholders can easily see our progress, understand the context, and know which best practices were implemented. We have also focused on reporting orthogonal variables - performance indicators that vary independently of each other – for simplicity and to minimize the risk of overstating our performance.

While this Report concentrates on traditional environmental indicators – such as energy and water usage – UC Berkeley separately reports on **social and economic measures of sustainability**. These additional gauges of sustainability are reported through the UC 2012 Annual Accountability Report. The report includes data on affordability and learning outcomes, student satisfaction, as well as diversity, research, and budget.

Not only does the campus work to improve its environmental performance, but we also strive to **improve our sustainability reporting**. In the coming year, we will work to make our reports compliant with Global Reporting Initiative standards and will also include new metrics as part of our commitment to the Plastics Disclosure Project.

The 2012 Campus Sustainability Report documents how well the campus has implemented projects to achieve our goals, initiated new best practices, and expanded the culture of sustainability. **Our progress in the last year is significant:** 

- Greenhouse gas emissions dropped by 3.7% relative to 2010, primarily because our utility provided additional low-carbon power.
   While total GHG emissions have risen 11.7% since 1990, emissions per research dollar have dropped by 31.5% in that same time period.
- Water use dropped 3.6% last year and is down 8.2% since 2008 – close to our 2020 reduction goal of 10%. Campus sales of water bottles have declined by 48% since 2006.

- The campus has ten LEED<sup>™</sup> certified building projects, representing almost 7% of total square footage.
- The amount of solid waste sent to landfills by the campus went down by 4.4% last year.
- Fuel use from fleet and commute continues to be at least 25% below 1990 levels, exceeding the campus goal. The percentage of green vehicles in the fleet has risen to almost 22%.
- Campus purchases of sustainable food remain higher than the 20% goal set for 2020. Also, 15-20% of the purchases qualify under more than one sustainable food category.

This report would be incomplete without giving credit to all of the faculty, staff, and students who have been instrumental in achieving this progress – I hope you enjoy reading about their efforts and stories. I also hope you follow the new campus Energy Management Initiative, monitor your building's energy dashboard, and help the campus further reduce our energy campus use through behavior change.

> Lisa McNeilly DIRECTOR of SUSTAINABILITY

## Campus Sustainability Report

First introduced last year, the Sustainability Snapshots provide a quick and easy-to-read summary of UC Berkeley's progress toward its sustainability goals, focusing on those that are quantifiable. Additional information on what steps the campus took in the past year can be found in the sections that follow, and all data are included in the Metrics tables on pages 36-38.



## WATER

below 2008 levels by 2020

since 2008.

## ENVIRONMEN Design future projects to minimize

BUILT

Goals

energy and water consumption and wastewater production; incorporate sustainable design principles into capital investment decisions; base capital investment decisions on life cycle cost, including the cost of known future expenditures.

### **Progress**

The campus now has ten (10) LEED<sup>™</sup> certified building projects, representing almost 7% of total square footage.

**LEED™** Certified 2008 **Buildings Projects** 2009 2010 2011

638.9

624.7 602.1 2010

2011

## NASTE

## Goals

Goals

Achieve a 75% diversion rate by June 2012 and zero waste by 2020

## **Progress**

The total diversion rate for campus is 56%, down due to less construction waste being generated. The diversion rate when construction waste is excluded has increased by 5 percentage points to 46%. The amount of solid waste sent to landfills went down by 4.4% last year.







## PURCHASING

Comply with the University of California environmentally-preferable purchasing policies and procedures.

## Progress

UC Berkeley purchased \$5.6 M of environmentally-preferable products in 2011, & purchases of copy paper that contain post-consumer waste are now 76%.

New software should allow campus to expand the number of green products purchased, while the Strategic Sourcing initiative works to incorporate sustainability criteria in more contracts.

## Percentage of Recycled Copy Paper Purchases



# TRANSPORTATION

### Goals

By 2014, reduce fuel use by commuters and campus fleet to 25% below 1990 levels

### **Progress**

Fuel use from fleet and commute continues to be at least 25% below 1990 levels, exceeding the campus goal.



# FOOD & HOUSING

### Goals

By 2020, increase sustainable food purchases by campus foodservice providers to at least 20%

### **Progress**

The percentage of purchases of sustainable food remain higher than the goal set for 2020. Also, 15-20% of the purchases over the year qualify under two or more sustainability reporting categories.



## Across Campus

While much of the work presented in this Report will focus on specific topics, there is also important work being done campus-wide to help define the culture of sustainability at UC Berkeley. These measures – campus committees and organizations, grants, communication tools, reports, and other similar initiatives – serve to ensure that sustainability is institutionalized on campus.

## Institutionalizing Sustainability

The Chancellor's Advisory Committee on Sustainability (CACS) promotes environmental management and sustainability on campus. Membership includes faculty, staff, students, and alumni.

CACS hosts an annual Sustainability Conference, presents annual Sustainability Awards, and funds the Chancellor's Green Fund Grants and CACS Internships.

In 2009, the campus adopted its 2009 Campus Sustainability Plan to define a vision of long term sustainability and action being taken to achieve the vision.

The Office of Sustainability – created in 2008 – publishes the Bright Green News newsletter, offers a sustainability tour, plans Student Sustainability Forums, and hosts four websites and a Facebook page.

In addition to the Office of Sustainability's three full-time staff and 8 to 15 student interns, there are campus staff working on energy management, energy efficiency, green buildings, grant coordination, and recycling.

EH&S maintains an Environmental Management System (EMS) that identifies the environmental aspects of UC Berkeley's activities in order to determine those which may have a significant impact on the environment. One very visible example is **The Green Initiative Fund (TGIF)**, which has provided over \$1 million in grants to campus projects. In addition to the grants, TGIF launched a new website to provide better resources for campus sustainability projects.

One new TGIF project will be a Student Sustainability Resource Center, which will establish a permanent office and fund five implementation and planning interns and a workshop for setting objectives and plans. This Center is expected to enhance and support the work of existing student groups and provide a central location for collaboration.

## **Staff Sustainability Training Debuts**

In Fall 2011 the Office of Sustainability offered the first ever staff sustainability training - **WORK**bright green. Twenty campus staff engaged with campus experts (staff and students) about simple and feasible ways to reduce the environmental impacts of their work. The free 7.5-hour training equipped staff with tools to make informed choices to improve sustainability in the workplace, bring green projects back to the office, and collaborate with other campus sustainability stewards. One major premise of the training is that sustainability can be enhanced in any job on campus.

## Sustainability-Themed Art Decorates Utility Boxes

The UC Berkeley Chancellor's Community Partnership Fund provided \$20,000 towards Streets Alive!, an initiative of the



Photo: earthisland.org



Photo: Kim LaPean



## Projects and Initiatives

The Green Initiative Fund (TGIF) is a student fee funded grant program for sustainability projects. In five years, it has awarded \$1,270,000 to 70 different projects, which have resulted in 157 paid student internships.

The ASUC Sustainability Team creates and implements a variety of projects – including the campus Earth Week – that help establish sustainable practices and promote environmental awareness on campus.

Number of certified green departments: 12 (New certifications: Cal Catering, Cal Student Store, University Health Services, and CITRIS)

Number of certified green events: 107, with over 30,000 attendees (as of May 2012)

Health\*Matters, the wellness program for faculty and staff, integrates health and sustainability with the Eat Well Berkeley initiative, annual events like Food Day and WalkGreen, and tools like the Shoppers' Guide to Pesticides.

There are at least six (6) Alameda County Green Businesses on campus.

The Vice Chancellor for Equity and Inclusion is charged with implementing the campus Strategic Plan for Diversity, Equity, and Inclusion (Pathway To Excellence 2009).

UC Berkeley is a member of the East Bay Green Corridor Partnership, which is committed to strengthening the regional green economy while reaching sustainability goals.

Earth Island Institute, to complete seven new utility box artwork installations by campus-affiliated artists on city streets near campus. All artwork was based on the theme of sustainability, targeted to engage and inspire communities and decision-makers about the concepts and application of sustainable principles. The Earth Island Institute worked with the City of Berkeley and local commissions to obtain final approval of art before it is installed.

"This [Student] Forum was such a great opportunity to learn more about all the different green clubs Cal has to offer. I'm going to apply for the Engineers Without Borders internship to help improve the water quality in Peru as soon as I get home!"

Allyson Beach



Photo: Rachel Balmy

## Energy & Climate



The results of the preliminary 2011 Greenhouse Gas (GHG) Inventory reveal а decrease in greenhouse gas emissions of 3.7% or a reduction of about 7,000 metric tons CO2e relative to 2010. With this decrease, the campus has achieved the lowest annual level of emissions since 2006 The reduction in emissions is primarily the result of PG&E providing more renewable energy and lower-carbon power during the year lowering their emissions from electricity generation by 23%. PG&E reports that they anticipate this positive trend to continue in 2012. Additionally, emissions from business air travel dropped to close to 2006 levels, with approximately 10 million fewer miles (2,700 fewer trips) flown in 2011 compared to 2010. Steam emissions were up about 6% - an increase of about 5,000 tons from the previous year.



Total GHG emissions have risen 11.7% since 1990, although emissions per research dollar have dropped by 31.5% in that same time period.

At UC Berkeley, the main energy sources include utility-provided electricity; purchased steam from an on-campus, natural gas fired, co-generation plant; and natural gas used for heating and hot water in a limited number of buildings. The top three sources of emissions are steam (46%), purchased electricity (24%), and business air travel (11%). The campus works to reduce its emissions through a range of projects, with a focus on reducing energy use in buildings.

The campus added over 10,000 therms of renewable energy with the opening of the Maximino Martinez Commons residence hall, which is equipped with a **solar thermal water heating system**. The Cal Climate Action Partnership has also developed preliminary guidelines for campus purchases of renewable energy certificates and carbon offsets



Electricity use has climbed over 35% since 1990, although in recent years use per square foot has been dropping.

and has begun the analysis and work to set the **next interim GHG reduction and climate neutrality targets**. In the coming year, the Strategic Energy Plan (SEP) will have 50 projects underway, including commissioning for almost 30 buildings, lighting projects in 15 buildings, multiple ventilation retrofits, and steam line insulation.

The new **Energy Management Initiative** is a comprehensive program that empowers faculty, staff, and students to take simple energy savings



measures that will reduce our environmental

footprint and save the campus money – returning those funds to teaching and research. Prior to this initiative, occupants rarely knew how much energy they used or how much it cost.

The initiative introduced several new resources in the spring of 2012, designed to help permanently reduce the amount of energy the campus uses through behavior change. The campus community can visit the myPower website to see real-time energy use data for 63 campus buildings. The website also provides information about proven ways to save energy in offices, labs, and residence halls.

As part of the initiative, an Energy Office was created to track, monitor, and manage energy usage campus-wide. The



Total energy use has increased since 1990, even though use per square foot has been more stable.







Photo: Erin Fenley

Energy Office will work with facility managers and occupants to speed energy-related repairs and identify conservation measures and will administer the Energy Incentive Program (EIP). The EIP achieves electricity savings by establishing a baseline level of electricity usage for campus Operating Units (OU) and crediting or charging each OU based on its annual electricity usage relative to its baseline. Because OUs will be able to better manage energy usage, they can pro-actively decide where to implement energy savings, qualify for tangible incentives, and utilize cost savings to fund new projects.

In addition, an **Energy Policy** is being developed that provides an administrative framework to support energy-wise decisions and choices across the campus community. The Energy Policy will help achieve the vision of the Energy Management Initiative (EMI) by reducing costs, more-effectively utilizing resources, and instilling a culture of continuous improvement and waste avoidance.

### Keen Eyes Identify an Energy Anomaly

In June, Duncan Callaway, an Assistant Professor in the Energy Resources Group, contacted myPower by email with a simple question: Why did the base load power at Barrows Hall bump up immediately after graduation and not go back down? Professor Calloway and his students had noticed a spike where electricity use jumped seemingly overnight in May. The Energy Office used data and the analytic capabilities of the dashboard software to sort through possible causes of the increased use. They quickly found an equipment problem and resolved the issue, returning the equipment to its previous work settings. The immediate impact is visible with the drop in use in early July. According to the Energy Office, without the dashboard and assuming this problem had gone unnoticed, the annual avoided costs could have been as high as \$45,000.

### **Campus Energy Efficiency Projects Have Saved Over 19 Million kWh**

Since 2006, the campus has funded multiple projects under its Strategic Energy Plan to reduce energy usage in new and existing campus buildings. As part of a partnership with PG&E, these projects are also expected to have saved close to 640,000 therms of natural gas annually, for an emissions reduction of about 8,900 tons and an annual cost saving of over \$2.5 million.

### Strategic Energy Plan brings Bi-Level LED Lighting to Campus Stairwells

The campus has installed 275 bi-level LED lights in stairwells in thirteen buildings, including Barrows Hall, Residential and Student Services Building, and Sather Tower. The fixtures are designed to default to the low (or dim) setting and include occupancy sensors to return to the high setting when a person enters the stairwell, replacing lighting that was always on. Lighting energy in the stairwells is expected to be reduced by 82%, and save about 106,000 kWh and 30 metric tons CO2e annually.

## Lighting Retrofits come to Hearst Memorial Gym and Zellerbach Hall

Recently completed lighting retrofit projects in Hearst Memorial Gymnasium and Zellerbach Hall and Playhouse included the standard upgrade of lamps and ballast to the latest, efficient models, but also made other, less common improvements. In the dance studio and other areas with indirect (upward-facing) fixtures, the existing inefficient high-intensity discharge lamps were replaced with modern T5 fluorescents, maintaining the appearance of the fixture while producing more light with less energy. In the gymnasium, the fixtures now have wireless controls and occupancy sensors. In Zellerbach Hall and Playhouse, the backstage lighting was upgraded, providing higher light levels for backstage workers while consuming less energy.

## Focus the Nation: Helping UCB Move Clean Energy Forward

Focus the Nation and the ASUC Sustainability Team sponsored a forum in February to address the question "Is 100% clean energy possible for the UC Berkeley campus?" The event brought students, professors, community businesses, professionals, and legislators together for a collaborative discussion on creating a fossil-fuel-free campus. A renamed group – STeam Energy – is now evaluating options like putting solar panels on campus roofs, and making one campus building 100% renewable.

## Green Cup Energy Savings Competition

The Greek community hosted its first energy savings competition between fraternities and sororities. Green Cup 2011 challenged 18 chapters to reduce their per capita electricity and natural gas consumption and offered a \$2,000 prize to fund a retrofit of the winning chapter house. The competition idea was incubated in ER 190 and was a partnership with Greening the Greeks, Green Campus, and The Green Initiative Fund. Phi Gamma Delta (Fiji) fraternity was the winner after reducing their per-capita electricity consumption by 40% and natural gas consumption by 24%. In total, the 18 participating chapters avoided 11 metric tons of greenhouse gas emissions and saved over 29,000 kilowatthours of electricity and \$5,600 in utility bills. The Green Cup also won a Student Energy Efficiency Best Practice Award at the 2012 California Higher Education Sustainability Conference.

## CalCAP Wins Clean-Air Leadership Award

The Cal Climate Action Partnership was honored in April with a clean air award from Breathe California. At its awards lunch in San Francisco, the volunteer health organization recognized the CalCAP initiative for "significantly reducing greenhouse gas emissions and demonstrating climate leadership through its student activism, broad organizational partnerships, climate action planning and financial commitment to reducing climate change."



## At a Glance

UC Berkeley maintains an inventory of Scope 1, 2, and 3 greenhouse emissions, which is reported to The Climate Registry and thirdparty verified.

Scope 3 emissions sources include commute, business air travel, solid waste, water, and purchases (calculated separately).

UC Berkeley's Cal Climate Action Partnership (CalCAP) has identified energy saving projects that will reduce greenhouse gas emissions by about 25,000 metric tons CO2e.

The campus Strategic Energy Plan implements energy efficiency retrofit projects in campus buildings over 50,000 square feet.

The Climate Action Fund accepts donations to the campus effort to reduce greenhouse gas emissions.

PP-CS has installed energy dashboards in 63 campus buildings; 31 more will be installed by Spring 2013. An energy management system that controls ventilation, temperature, lights, and operating hours is used in 70 buildings on the main campus.

Residence hall competitions to reduce electricity consumption and CFL exchanges are held each semester.

The student-run Berkeley Energy Resources Collaborative (BERC) hosts an annual energy symposium.

The Cal Energy Corps is an undergraduate internship program created to engage students from UC Berkeley in the design, development, and delivery of sustainable energy and climate solutions around the world. "[In one of the stairwells in Barrows], the old lighting was yellow and dingy, the new lighting is much brighter - it's great to know that we can have much better light while being even more energy efficient." Sandra Wasson, General Manager of KALX<sup>1</sup>



## Water

When Berkeley students passed a resolution to end bottled water sales by a 5 to 1 margin,

the Student Store decided to take action. Jeff Deutsch, the former Cal Student Store Director said, "It is a response to an issue the students, our most valuable customers, care about."<sup>2</sup>



Photo: STeam

Total potable water use dropped **3.6% last year and is down 8.2% since 2008.** Water use per capita has dropped by 28.6% since 1990, even given increases in square footage and the percentage of on-campus residents. This continued reduction is due to a range of actions taken by campus.

Goals

Reduce potable water use to 10% below

2008 levels by 2020

About half of the water consumed on campus is domestic (toilets, urinals, showers, and faucets), divided equally between residence halls and all other campus buildings. About one-fifth of usage is in lab buildings (excluding their domestic usage), with irrigation and the steam plant each using about 10% of the total. Over 90% of irrigation systems are automated and connected to a weather station.

The Capital Renewal Committee has allocated funding for high-priority projects that are needed to reach the potable water reduction goal. In addition, there are multiple grant-funded water projects underway on campus, including a competition on water conservation in the Greek community. The campus participates in a system-wide Sustainable Water Systems Working Group and in the next year will develop a Water Action **Plan** that identifies the campus' long term strategies for achieving sustainable water systems. The campus will also convene a steering committee composed of faculty, staff, and students. The campus will continue to monitor whether the local utility can provide non-potable water for irrigation and consider doubling the water use reduction target if it does.

800,000 15,000 15,000 15,000 10,000 0 0,000 0,000 15,000 10,0

**Millions of** 

Gallons of Water Used

638.9

624.7 602.1 2009

2010

2011

## Campus Plumbers Reduce Water Use by 17%

By altering 57 toilets and urinals to use less water, plumbers Nick Pigati, Diane Coppini, and Eric Lausen reduced water consumption in University Hall by 17% or 33,000 gallons per year. They used a simple conversion kit (rather than replacing the fixtures) to reduce the gallons per flush from 3.5 to 1.6.

## New Water Bottle Refill Stations: Healthy & Sustainable Choices Made Easier

Four campus buildings with high student traffic – Evans, Stanley, Boalt and University Halls – got new water bottle refill stations thanks to a grant from The Green Initiative Fund (TGIF). To promote the new refill stations, the I Heart Tap Water webpage hosts a Google Tap Map to help the campus community familiarize themselves with all refill station locations, as well as some of the best drinking fountains identified by I Heart Tap Water pledge participants.

The emergence of refill stations as part of campus building improvements has

**ble Choices Made Easier** bus buildings with high stude



Photo: Peg Skorpinski

developed alongside student demand for phasing out the sale of bottled water at UC Berkeley. In fact, campus sales of water bottles have declined by 48% since 2006. Capital Projects also developed Design Standards for Installation of Refill Stations in Existing Buildings and has included refill stations in new campus buildings such as Boalt In-fill, Li Ka Shing, and the Athletic Performance Center.

## Cal Student Store Eliminates Bottled Water

Aligning with the Take Back the Tap Initiative, the Cal Student Store has committed to remove bottled water from their shelves. The Store is also promoting drinking fountains and reusable bottles th rough signage and offering a variety of reusable bottles for purchase.

## Power Save Green Campus Fights the Flow

This campaign was designed to encourage students of the Unit 1 residence halls to reduce their water consumption when taking showers, through the installation of special shower valves and educational signs. The shower valves can reduce water and natural gas consumption (used to heat water) by reducing water flow when shampooing, shaving or soaping up. In the low position, the valve allows just enough water to flow to maintain the original temperature. According to survey conducted on the residents, 82% of students in the target residence halls (Christian and Slottman) used the valves at least 20% of the time – leading to estimated savings of over 130,000 gallons of water. (Final Report to TGIF)

## Engineers Without Borders, UCB Student Chapter: Water Filtration Project in Peru

In Peru, a number of arsenic "hot spots" have been identified in village wells in Carancas and Huata. Although the Peruvian Ministry of Health's maximum contaminant for arsenic exposure is 10 parts per billion (ppb), these villages have approximately 60-900 ppb. The UC Berkeley student



Photo: tgif.berkeley.edu

chapter of Engineers Without Borders is helping these villages acquire arsenic filtrations, potentially serving as an initiative to be replicated in dozens of communities.

## At a Glance

The Chancellor's Advisory Committee on Sustainability has completed research on campus water usage, which includes a feasibility study of water efficiency projects.

New construction and major renovation projects will maximize the number of water use reduction credits as part of the LEED™ certification process.

I Heart Tap Water, a partnership between Cal Dining, Recreational Sports, Environment, Health & Safety, and University Health Services promotes tap water as the preferred beverage of choice and educates the campus through a website, newsletters, Facebook, posters, and an on-line pledge.

There are 21 water bottle refill stations on campus in publicly accessible locations. There are also several "bottle fillers" retrofitted to existing ADA-compliant water fountains with more being added.

The campus implements Stormwater Pollution Prevention Plans for all campus construction projects to manage stormwater runoff and protect water quality.

## Built Environment

### Goals

Design future projects to minimize energy and water consumption and wastewater production; incorporate sustainable design principles into capital investment decisions; base capital investment decisions on life cycle cost, including the cost of known future expenditures.





Number of LEED TM Building Projects

The campus now has ten LEED™ projects, certified building representing almost 7% of total square footage. In addition, all major projects currently in the planning and design phase, including nine projects now in construction, are expected to be certified. Campus construction projects generally follow the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED™) system for green building performance, and major projects are designed to achieve a minimum of LEED™ Silver. In addition, all new building projects are designed to outperform the required provisions of the California Energy Code (Title 24) energyefficiency standards by at least 20%.

A new **Energy Policy** (currently under development) will also impact how buildings are constructed and renovated. The campus is developing this policy because of our commitment to the environment, and our leadership role as responsible stewards of the physical environment. The policy will help us manage energy consumption in accordance with these values that minimize the consumption of energy, maximize the efficiency of energy use, and reduce campus greenhouse gas emissions. The Energy Policy provides campus requirements for reducing energy use while maintaining the mission and function of the University and the comfort of building occupants. The Policy works in conjunction with campus requirements to establish standards for heating, cooling, ventilation, lighting, information technology, appliances and equipment procurement, new building design and construction, and building renovation design and construction.

A **Learning and LEEDing at Cal** grant from TGIF will fund three student interns and the expansion of the Building Sustainability @ Cal LEED Intern Program to offer project LEED<sup>™</sup> certification services for smaller campus renovation projects currently below the threshold required by the campus Policy on Sustainable Practices.

## Three more LEED Certified Building Projects at UC Berkeley

In the past year, three more UC Berkeley projects received green building certification through the US Green Building Council's LEED<sup>TM</sup> process. LEED<sup>TM</sup> is a standard measure of the

sustainable features of buildings and is awarded at different levels according to a rating system that evaluates a building's environmental attributes and sustainable features.

## The Boalt Law Building Infill project received LEED™ Gold (NC) certification.

This award-winning project includes several outstanding, well-designed green building features, such as droughttolerant landscaping, on-site rainwater capture, daylighting, high-performance lighting and ventilation systems that automatically respond to existing climate conditions, and low-flow plumbing fixtures. The project also successfully participated in the PG&E Savings by Design program, receiving almost \$52,000 rebate for energy efficient design. The **Boalt Law Building Renovations** received LEED™ Silver (CI) certification for a set of improvements to classrooms, offices, and other work spaces.

The Li Ka Shing Center also received LEED™ Gold (NC) certification. The building has a range of features—including a green roof planted with



Li Ka Shing Center

Photo: Cathy Cockrell, NewsCenter

"We just kept making the building greener and greener."4

> Teri Mathers, Capital Projects, Project Manager on the Li Ka Shing Center

input from the UC Botanical Garden to reclaimed-wood paneling and lowemitting office carpeting and rubber lab floors. Scientists at Lawrence Berkeley National Laboratory were consulted to help develop and evaluate energyefficiency options for the building, whic h features operable, user-controlled shutters, and occupancy sensors tied to the lighting system<sup>3</sup>

## Energy Biosciences Building Wins Award

The new Energy Biosciences Building won the Overall Sustainable Design Award at the 2012 California Higher Education Sustainability Conference. The building employs a broad range of sustainability strategies, with special attention to managing laboratory and fume hood ventilation to reduce energy use. The design is almost 39 percent more efficient than industry standards. Hundreds of usable desks from the building that formerly occupied the site we re salvaged and distributed to schools.

## At a Glance

UC Berkeley has four Gold certified LEED<sup>™</sup> building projects (Commercial Interiors), four Silver and one Gold LEED<sup>™</sup> certified projects (New Construction), and one Certified building project (New Construction). There are an additional eleven building projects that are in review, design, or construction.

As of 2012, there are ten LEED™ accredited professionals working at Capital Projects on campus, and dozens more within the academic and research units.

All campus Capital Project Managers have attended a LEED<sup>™</sup> Project management workshop to provide training and education in using the LEED<sup>™</sup> green



Maximino Martinez Commons Photo: Keith Stevenson

building certification system.

Several members of the campus community, including both students and staff, are actively pursuing LEED™ EBOM professional accreditation. As of July 2012 at least six students and one staff have achieved this and several more plan to obtain LEED™ professional accreditation this academic year through the Building Sustainability @ Cal program's TGIF grant.

The student-run Building Sustainability @ Cal program has developed sustainability plans for at least 28 campus buildings.

Indoor air quality questions and complaints are handled by a full-time industrial hygienist.

## Waste



The total diversion rate for campus is 56%, down due to less construction and demolition waste being generated. The diversion rate when construction waste is excluded, however, has increased by 5 percentage points to 46%. The amount of solid waste sent to landfills by the campus went down by 4.4% last year.

Hazardous waste generation has fluctuated in the last few years, due to the demolition of buildings with asbestos and lead. Environment, Health, & Safety (EH&S) has recently started tracking hazardous waste by laboratory. By increasing awareness of the volume of waste created, this data is expected to reduce total generation.

The campus currently recycles mixed paper, newspaper, magazines and books, cardboard, beverage containers, toner and ink jet cartridges, electronic waste, plastic film, plastic pipette containers, metal, motor oil, tires, and batteries. The campus currently composts a portion of food waste, compostable kitchenware, green and wood waste, and pallets. The campus has a hazardous waste and waste minimization plan that includes e-waste.

The campus has formed a Zero Waste

Working Group, which will help develop a Zero Waste Plan and related implementation measures. The Plan will document ways to increase recycling and composting, improve reporting of construction and demolition recycling, add more recycling and composting bins, improve signage, and increase education and outreach. Other important steps the campus should take include working with vendors to offer more recyclable, compostable, and reusable materials and developing take-back programs. CACS produced a research paper, a basis for the Plan, which reveals that campus-wide recycling could get the campus to an 80% diversion rate of municipal solid waste.

In addition, there are a large number of waste reduction projects planned for the coming year, as the campus works to achieve its zero waste goal by 2020, with at least ten campus grants focused on waste reduction. The Compost Alliance will continue its work, and the Chemical Exchange will expand on-line. Recycling bins will be added at 21 tennis courts, and there will be an indoor recycling program pilot at Wurster Hall, with standardized bins, signage, and education to then be implemented campus-wide, pending results. This will be complemented by a program to educate the campus

"We all must do our part to preserve our natural resources, and these early efforts are important first steps as we move toward a zero-waste goal at Memorial Stadium. Through awareness and practice, achieving our sustainability objectives will help protect our environment for all to enjoy."

Sandy Barbour Director of Athletics⁵

18



community about recycling and composting, especially about where to dispose of each type of waste. Another grant will conduct a study to determine the costs and benefits of reusable and biodegradable food containers, and the feasibility of a reusable food container program in Cal Dining.

The Campus Recycling and Refuse Services (CRRS) office has also received funding to standardize and perform extensive waste audits, provide support for zero waste events, and address upstream waste issues through a Zero Waste Research Center. CRRS will renovate the ReUSE station in Barrows Hall, to give a much-needed facelift to the program's flagship station, nestled in an abandoned phone booth.

## Cal Athletics Initiates Zero Waste Goal

Earlier this year, Cal Athletics, CRRS, and corporate sponsor Recology announced a new collaborative effort to achieve zero waste. The reopened California Memorial Stadium features new bins for recycling and composting with the slogan Blue & Gold Makes Green. In addition, Cal Athletics' concessions, catering, and merchandizing partners will modify their menus and packaging to help reach the zero-waste goal.

Haas Pavilion is also part of the commitment. in February 2012, Cal's men's basketball team won an exciting victory against Arizona State – it was also a zero-waste event. With Chancellor Birgeneau, City of Berkeley Mayor Bates and Councilmember Gordon Wozniak, State Senator Loni Hancock, and representatives from Recology in attendance, the game achieved an impressive 85% diversion rate.

## First University to Commit to Plastic Disclosure Project

By pledging to calculate and report our 'plastic footprint,' the campus joined with the Plastic Disclosure Project to help reduce plastic waste. Student interns will audit and track plastic waste from multiple sources on campus, which is currently estimated to comprise around 25% of the waste stream. As part of the commitment, the campus will make full disclosure of this plastic use and devise innovative strategies for disposal.<sup>6</sup> Photo: Zara Fernandez

## At a Glance

Funded by the Campus Recycling and Refuse Services, the student-managed ReUSE program operates 18 on-campus reuse stations for office supplies and the annual Second Chance clothing sales and reader giveaways. ReUSE projects reduce waste by 2-5 tons annually.

ReUSE has also operated the Online Materials Exchange since 2009, facilitating direct exchanges of used items between campus affiliates.

The campus works to reuse office supplies, equipment, and vehicles through the Overstock and Surplus Den.

Mail Services and others work with vendors such as Ecological Mail and Intra Mail network to reduce unwanted mail.

Construction contracts include a requirement that waste must be tracked and that there be a 50% minimum diversion rate.

The College of Chemistry runs an exchange that traded 1,523 chemical items last year.

The campus no longer prints a phone directory, maintaining only an on-line version.

6. Carol Ness, "A worldwide first: Berkeley steps up to the plastic waste challenge," NewsCenter. June 7, 2012.

## Campbell Hall Recycling and Reuse Intervention: "Free Days"

By hosting Free Days in late October in Campbell Hall, ReUSE and their partners kept almost 35,000 pounds of office supplies and furniture out of the landfill by finding them new uses or owners. Traditionally, when a building is vacated, a moving company would throw away most items and only recycle the metal. ReUSE worked with Building Sustainability at Cal and CRRS as well as Capital Projects to make the event a success - over 400 people were able to participate in the 3-day event. ReUSE also recycled 85,000 pounds of metal and 11,300 pounds of paper - and received a campus Sustainability Award for their efforts.

## **Compost Alliance Phase I Complete**

The Compost Alliance – a student group collaborating with CRRS to implement a building composting system – has implemented compost collection programs in 15 buildings and disseminated universal campus signage. In partnership with campus staff, faculty, and students, it is also es timated that the program has diverted more than 18 tons of waste from landfills, and that the Compost Alliance has educated or reached out to more than 1,500 people over the course of the program. (2011-12 Year End Report to TGIF)

## October was Campus Data Cleanup Month

The Office of the Chief Information Officer and UC Mail's Cal Shredding partnered



Photo: Claire Porter

to promote a Campus Data Cleanup Month in October 2011. By collecting and shredding boxes of documents that are no longer required to be stored, Cal Shredding once again showed how they help the campus reach its sustainability goals. They worked with CRRS to recycle all shredded paper and with ReUSE to process miscellaneous office supplies in good condition (such as three-ring binders, hanging files, banker boxes, paper clips, binder clips), helping to increase the campus diversion rate.

### **Greeks Produce Less Waste**

With a goal of establishing and

improving recycling, composting, and re-use systems in fraternity and sorority chapters. this project distributed signage and bins, compiled "411" fact sheets, trained sustainability chairs, and conducted waste audits. In fact, over 300 bins were distributed to 16 fraternities in one afternoon. Greening the Greeks will continue to reduce the environmental impact of Cal's Greek community through a variety of sustainability initiatives, building upon its sustainability efforts with another TGIF grant to host a water conservation competition. (Final Report to TGIF)



Waste sent to the landfill dropped by 4.4% last year, and waste per capita has decreased by 35.5% since 1990.



The amount of construction and demolition waste generated varies significantly each year, impacting the quantity that can be diverted.



## Purchasing

### Goals

Comply with the

University of California environmentally-preferable purchasing policies and procedures. Copy Paper Purchases

2009

2008

2010

2011

**Percentage of Recycled** 

72%

of surveyed U.S. companies say "sustainability influences their purchasing decisions."

2012 Rackspace Green Survey



The campus purchased at least \$5.6 million of environmentallypreferable products last year, and the percentage of copy paper purchases that contain post-consumer waste is now 76%. These numbers are being verified, and the reasons for the declines in reported purchases relative to last year are being investigated, including a possible underreporting of green computer purchases. The new campus eProcurement system, BearBuy, should allow the campus to expand the amount of green products it purchases by making it easier to procure, while Strategic Sourcing works to incorporate sustainability criteria in more contracts and to implement campus green programs with its suppliers.

The Purchasing goal focuses on achieving the ambitious targets set at the systemwide level in the "Sustainable Practices Policy," which includes requirements on preferential purchases of Energy Star equipment, recycled content products, and other third party certified green items, along with guidance on packaging waste and takeback programs. Moving forward, the campus will continue to investigate the possibility of also setting a more quantifiable goal, based on purchases of environmentally-preferable products or a different metric. Doing so will require better data on purchases and on the environmental and other attributes of purchased items.

UC Berkeley and UC San Francisco are partnering on a new initiative, funded

through a **Pollution Prevention grant** from the U.S. Environmental Protection Agency. This grant will develop a replicable methodology to identify "green", "environmental", "eco-friendly" product alternatives that are third-party certified and work to better highlight these product alternatives.

## Greener E-Purchasing is Now Easier

BearBuy has now been rolled out to the Berkeley campus. Enabled catalog suppliers are offering environmentallypreferable equipment, janitorial supplies, lab supplies, office supplies, and other products that are more easily found and search for by the buyer. Hard copy catalogs or price lists from these vendors are no longer needed. Use of BearBuy means processing through electronic orders versus printed purchase orders and invoices. Electronic documentation also reduces the need to store hard copies. Supporting documents can be attached online and meet document





Photo: Alex Butler

retention standards, eliminating the need for hard copy retention. In addition, there is a list of Environmentally Preferred Office Supplies for shoppers to browse. A number of enabled catalog suppliers have strategically sourced agreements that include sustainability requirements.

## **Better Packaging from Office Max**

Research Enterprise Services (RES) and Procurement Services have piloted a reusable tote program for delivery of office supplies from Office Max. Procurement Services is planning to roll out the program to other departments soon, using the new Boomerang Boxes from Office Max – reusable, stackable delivery boxes that are made from a minimum of 50 percent postconsumer content.

## Getting Rid of Old, Inefficient Desktop Printers

Another new program from Procurement Services involved a printer exchange. As the campus looks to reduce costs and increase efficiencies in procurement and administration, a targeted pilot program to upgrade printers and use less energy replaced 43 old printers for ENERGY STARrated options – at no cost to the campus. The average age of the discarded printers was 11 years, while the oldest was from 1997. This new equipment can use 40% less energy and run cooler and last longer – while also offering a benefit to cashstrapped departments.

## Joint Administrative Computing Standards (JACS) Support Energy Efficient Computers

The new JACS Program establishes standard configurations and purchasing agreements for personal computers that will provide the campus with quality personal computers while achieving considerable cost and time savings – as well as energy savings. The standards selected by the team all meet EPEAT and Energy Star 3rd standards recognized by the University of California System. By establishing one set of standards, JACS also reduces the total cost of ownership for personal computers by leveraging purchases of standard bundles of environmentally-preferable computers.

## Purchasing

UC Berkeley participates in the Strategic Sourcing program that is responsible for the negotiation and management of University-wide agreements, and the development and oversight of policies governing purchasing activities. Strategic Sourcing strives to incorporate environmentally friendly products and services.

UC Berkeley has developed Sustainable Copy Paper Guidelines.

Physical Plant-Campus Services completed documentation of a new Green Cleaning Policy that outlines sustainability criteria for cleaning products, supplies, tools, equipment, and practices at UC Berkeley.

Procurement Services' Supplier Diversity Program promotes business relationships and contract opportunities for small, local, and diverse businesses wishing to provide goods and services to the University community.

## Transportation

### Goals

By 2014, reduce fuel use by commuters and campus fleet to 25% below 1990 levels



Fuel use from fleet and commute continues to be at least 25% below the campus goal. While use increased slightly, it is still 30% below 1990 levels. Emissions from business air travel dropped to close to 2006 levels, with approximately 10 million fewer miles (2,700 fewer trips) flown in 2011 compared to 2010. The percentage of green vehicles in the fleet has risen to almost 22%, and Fleet Services is on track to reach its goal of having 25% of the fleet green by 2014.

According to the Fall 2011 campus transportation survey although fewer students appear to be taking transit than in 2008, substantially more are riding bicycles and walking to campus. Roughly 17% of the entire student body rides to campus as their primary mode of transportation and even more say they use biking as a secondary mode. 53% say they walk – an increase of almost 2% since 2008. The faculty and staff drive alone rate held steady at around 43%, but as with students there was a noticeable rise in cycling, with many electing bikes over transit. In fact, 20% of faculty now says they bike to campus. As a result of these trends, it is estimated that there are 2,300 more bikers on campus. In addition, more people walk to campus than drive alone or any other commute mode.

While many factors contribute to these moves to more sustainable forms of transportation, UC Berkeley offers a comprehensive package of programs to encourage them – all with the goal of reducing traffic and parking demands. The New Directions program offers a suite of alternative commute benefits to UC Berkeley faculty, staff, and students. The program offers bus pass programs, transit subsidies, discounted carpool parking pricing, pre-tax purchases, regional ridematching services, and a host of other benefits and incentives.

In addition to these established programs the campus is continuing to explore new programs as a part of its Parking and Transportation Demand Management (TDM) Masterplan. These include evaluating targeted marketing of transportation options, hiring a TDM Program Manager, expanding car share programs, and exploring varied pricing policies for parking. The campus also recently invested in a Periphery Study project in conjunction with the City of Berkeley and the Safe Traffic Research and Education Center that makes suggestion on how to improve pedestrian and bike safety along the campus periphery.



Photo: Parking & Transportation



Fuel use per capita has dropped sharply, 38.6% since 1990.

## Geared Towards Sustainability: Cal's First Campus Bike Day!

In September 2011, UC Berkeley hosted its first Campus Bike Day. Aimed at encouraging the community to commute by bicycle, this event was geared toward for avid cyclists and non-cyclists alike. The event included free repairs, a raffle, food vendors, and a Bike Fair, where all the mus ic was bike-powered by volunteer attendees. This event was made possible by the collaborative efforts of many students and organizations from the newly formed Campus Bike Initiative. Photo credit: Campus

## upbeat tune, the video shows the campus community using alternative methods of transportation across campus. Student communication associates filmed, directed, and produced the video. Getting across the theme of having the whole world in your hands, the video represents how the small efforts you take, such as taking the bus or biking, makes the world we share cleaner and healthier.

Louder campaign funded by The Green

Initiative Fund. Paired with a catchy,

## UC Berkeley Receives Honorable Mention by the League of American Bicyclists

### "How Do You Get Around Berkeley?"

The Office of Sustainability completed its second multimedia feature, "How Do You Get Around Berkeley?" part of the Talking

UC Berkeley has received an "Honorable Mention" from the League of American Bicyclists in their ranking of bikefriendly campuses. The Bicycle Friendly University (BFU) program recognizes



Photo: Nelson\Nygaard Consulting Associates Inc

## At a Glance

The campus has completed most of high priority infrastructure projects identified in the 2006 Campus Bicycle Plan and regularly participates in the region's Bike to Work Day.

The campus currently has 4,500 bike parking spaces, having recently added 150. This includes indoor storage in at least two buildings and four parking garages.

Bicycal is a student-founded organization that aims to empower UCB students, faculty and staff to successfully integrate the bicycle into their daily lives. They provide a space where members can learn how to maintain, operate and love their bicycles in an inclusive and safe space.

As of December 2011, the campus owned 561 fleet vehicles, 21.6% of which are considered green.

UC Berkeley has a variety of car sharing services on or adjacent to campus, including City CarShare, Zipcar, and Enterprise Rent-a-Car.

Over 1,700 UC Berkeley affiliates are members of Zimride, an innovative rideshare service for making one-time and on-going ride matches. higher institutions that promote and provide a more bicycle friendly campus for students, staff, and visitors.

## **New Shuttle-Bus Contract Good News For All**

UC Berkeley has updated its Bear Transit shuttle-bus program with a new vendor and new buses. Program changes include: using safer and more fuel-efficient new buses that run on biofuel, calling for the implementation of an online program to give riders real-time information about bus arrivals, and year-round free night shuttles, which previously ran only when classes were in session.

## **New Grant Will Make Digital Parking Space Information Available**

UC Berkeley and the City of Berkeley were awarded a \$1.8 million Value Pricing Pilot Program (VPPP) grant from the Federal Highway Administration to explore how dynamic pricing and occupancy information for parking can work together with incentives to use modes of transportation other than driving and reduce the amount of circling or hunting done for parking spaces. One of the key features of the pilot will be to make space availability information available digitally and to provide a daily use pass that allows for more efficient use of available

parking resources. Leading in to this program, a TGIF-sponsored marketing campaign will begin in late 2012 to see how a pledge program can help people to commit to "Break the Mode" of driving.

	1990/1992	2000/2001	2005/2006	2008/2009	2011
Faculty and Staff	1990	2001	2006	2009	2011
Drive alone	60.0%	50.2%	47.1%	43.1%	43.5%
Walk	12.0%	8.4%	7.7%	9.0%	9.3%
Transit	12.0%	17.8%	24.3%	25.2%	21.9%
Bicycle	5.0%	9.5%	7.5%	9.1%	11.0%
Rideshare	10.0%	9.1%	11.5%	11.8%	11.4%
Other	1.0%	4.0%	1.9%	1.8%	1.9%
Students	1992	2000	2005	2008	2011
Drive alone	10.7%	8.2%	8.0%	7.3%	6.0%
Walk	45.5%	53.5%	46.8%	51.0%	52.6%
Transit	18.8%	23.0%	31.9%	27.3%	21.4%
Bicycle	16.7%	8.7%	9.4%	11.5%	16.8%
Rideshare	4.4%	1.8%	2.7%	1.8%	1.6%
Other	3.9%	2.3%	1.2%	1.1%	1.7%

## ALTERNATIVE MODE SPLITS at UC BERKELEY, 1990-2011

Mode Splits: Transportation surveys, which are used to estimate mode splits, are generally conducted every three years.



25% of graduate students use bikes as their main way to commute to campus.

Photo: Campus Bike Day



## Food & Housing



Campus vendors continue to show leadership in their percentage of purchases of sustainable food, and **reported percentages this year remain higher than the goal set for 2020 (20%).** Also, 15-20% of the purchases over the year qualify under two or more sustainability reporting categories. Data includes both Cal Dining and two other vendors who reported on their purchases.

The UC Berkeley Sustainable Foodservices working group plans to conduct a gap analysis on current programs and on whether there are related guidelines for foodservice vendors. The working group will also **develop standard language for foodservice operator contracts** to codify policy and work with procurement staff to identify ways to offer Strategic Sourcing prices to the smaller food vendors. The Working Group will also work to expand its membership and convene regular meetings to set goals and review progress.

Other upcoming projects include expanding the in-house food preparation for the Berkeley Student Food Collective, Cal D ining Sustainability Team interns doing audits and outreach, and a study to determine the costs and benefits of reusable and biodegradable food containers and to test the feasibility of a reusable food container program in Cal Dining. Two more food-related projects will fund Food Day 2012 planning and activities and improve the Berkeley Student Food Collective's educational programs. Another project will focus on sustainable family living at University Village.



## Eat Green Program Promotes Healthy & Sustainable Food Habits

Health\*Matters offered an email-based behavior change program designed to help faculty and staff create healthy and sustainable food habits. Participants learned to purchase, prep, cook, and serve in a more environmentally friendly way. The program consisted of a weekly newsletter with information about a specific topic and goals related to the topic. Those who completed the four week program were entered into a prize drawing for Eat Green sustainability kits and reusable water bottles.

### Food Collective's Super Green Gala

Berkeley's Student Food Collective hosted their annual Gala Event with an extravagant four course menu using organic, local, and ethically sustainable produce. The non-profit UCB studentrun organization celebrated its first year of education and sustainable business, providing the community with ecologically sound, local, fair, and humane food from their storefront on Bancroft Street across from campus.

## **UC Berkeley Eats Real**

In October 2011, UC Berkeley celebrated the first ever Food Day. Food Day is a nationwide effort that seeks to bring together Americans from all walks of life to push for healthy, affordable, and delicious food produced in a sustainable, humane way. The event featured a BYO lunch picnic, a welcome address



## Food: At a Glance

Cal Dining has four certified organic salad bars; offers pre- and post-consumer composting in its kitchens and dining halls; sells its waste oil to be converted to biodiesel; has trayless dining at all locations; offers compostable containers, kitchenware, and cups; serves Marine Stewardship Council certified seafood; offers a discount for reusable coffee cups; uses 100% organic milk in dining halls and 100% organic eggs in all facilities; ensures 75% of entrees are vegetarian: partners with Buy Fresh. Buy Local and Community Alliance with Family Farmers; and donates food to a non-profit family shelter.

Cal Dining's food is 99.9% free of trans fat.

The UC Berkeley Sustainable Foodservices Working Group is implementing a workplan to achieve the sustainable food purchase goal for campus vendors.

The Berkeley Student Food Collective provides fresh, local, healthy, environmentally sustainable and ethically produced food at affordable prices to the Berkeley campus and greater community.

The ASUC Sustainability Team runs The Local, an organic vegetable and fruit stand.

The Eat Well Berkeley Initiative integrates sustainable food practices with nutrition guidelines for healthier meetings, vending machines, catering, and restaurants. Recent accomplishments include the launch of the Eat Well Berkeley Restaurant program at Pat Brown's and QualComm Café, two Cal Dining Retail campus restaurants. by Michele Simon (public health lawyer and food activist) and a Sustainable Food and Vendor Showcase (sponsored by Cal Dining).

## **Campus is Recognized for Its Efforts**

UC Berkeley was recognized as a 'Real Food Pioneer' by the Real Food Challenge, for piloting their calculator as a way to measure the percent of their budget that is spent on local and community-based, fair, ecologically sound or humane food. UC Berkeley was also named one of the 'Most Vegan Friendly Colleges' for 2011. Using student voting and a series of food assessments, People for the Ethical Treatment of Animals (PETA) recognized UC Berkeley (#9) for maintaining its standard of excellence in being green.

## **Cal Housing Leads the Way**

Forty percent of the LEEDTM certified building projects on campus have been in campus housing, one of the many ways that Cal Housing exhibits leadership on campus with its sustainability efforts. The newest residence hall – Maximino Martinez Commons (open August 2012) – also features the second campus renewable energy installation, a solar thermal water heating system. Cal Housing also works with students to reduce waste at the end-of-year moveout, educates residents through their Residential Sustainability Program, and has given away unneeded furniture from a residence hall that is being demolished.

## **Bring Your Own Mug Sees Results**

Bring Your Own Mug (BYOM) is a new sustainability campaign working to decrease the amount of coffee cup waste, promote a reuse mentality, and establish partnerships with



Rendering of Maximino Martinez Commons

Cal Dining and other campus cafes. BYOM has already sold or given away 175 special Klean Kanteen food-grade stainless steel mugs, has negotiated discounts for patrons using them, an d is currently working to estimate the amount of waste avoided by the program.

### **Continuous Improvement in Action**

A new Operational Excellence project at Cal Dining using the LeanPath ValuWaste food waste tracking system is saving thousands of dollars, fostering environmental sustainability, and empowering staff. Between August 2011 and April 2012, Cal Dining reduced kitchen waste by over a third – from over 3,000 pounds a week to about 2,000 pounds – which has resulted in avoided food purchases of more than \$1,600 each week. Cal Dining's goal for 2013-14 is to have food cost savings of approximately \$700,000. The project was funded primarily through a grant from the StopWaste Partnership, a public agency partnership between Alameda County's Waste Management Authority and its Source Reduction and Recycling Board.



Photo: Kira Stoll

## Housing: At a Glance

The Residential Sustainability Program (RSP) – a student-run program in the campus residence halls that promotes sustainable living through peer education – has initiated and supported a variety of programs, including Sustainability Week and Earth Week activities, paper towel composting projects, Clean Plate Clean Planet, and an Urban Camper Campaign.

The Global Environment Theme House brings together students and faculty to explore issues around environmental change, natural resources, sustainable environments, and environmental leadership. The Theme House also includes the Green Suite, Green Apartment, and Green Room demonstration areas.

Since 2006, the Residential Student Services Program has offered the Cal Move-Out Program in partnership with several campus and community groups. The program includes reader and clothing drives and the Bear-ly Used program that offers free pickups of larger, reusable items, and e-waste bins. The 2011 Cal Move-Out effort collected over 230 tons and diverted 90% of it.



"Staff are now constantly sharing with me different ways to save on food waste. There used to be a culture of 'it's just waste'. Now there is ownership and buy-in in the process of improving."<sup>7</sup> Shawn LaPean, director of Cal Dining



Photo: Eric Andersen



## Land Use

The campus has decreased impervious area by almost 14,000 square feet over the last five years.



The campus is currently completing a large planning effort for the Lower **Sproul Student Community Center** project, and undertaking a major planning effort for the Richmond Bay Campus, the latter in partnership with Lawrence Berkeley National Laboratory (LBNL). Both efforts will include progressive sustainability features and implement sustainability measures of the 2020 Long Range Development Plan (LRDP). The Lower Sproul project, for example, will replace existing paved impermeable surfaces with additional landscaping, permeable paving, and a raingarden. Both LBNL and UC Berkeley seek to have the Richmond Bay Campus be a model of sustainability as planning proceeds. Efforts are also on-going for the implementation of the Strawberry Creek Management Plan.

The LRDP describes a framework for land use and investment to meet the academic goals and objectives of the University. The companion Environmental Impact Report provides information on the environmental implications of the LRDP and includes an extended treatment of potential impacts and mitigation best practices. Importantly, the LRDP delineates a comprehensive approach for achieving a sustainable campus and has been amended to require that the campus design all aspects of new projects to achieve our short- and longterm greenhouse gas emissions reduction goals. From the LRDP, the campus goal is to plan every new project to serve as a model of resource conservation and environmental stewardship, using a range of key strategies (see the 2009 Campus Sustainability Plan for more details).

There are several new **grant-funded campus projects** that will focus on land

and land use-related issues. The Green Garden Program will fund a student intern to take a lead in the Integrated Pest Management program and work with horticultural staff and the compost tea intern to refine and define the Botanical Garden's organic fertility regimens. An online chemical exchange will help to minimize hazardous waste and reduce the quantity of chemicals purchased by UC Berkeley, reduce the amount of hazardous materials in storage, and reduce hazardous waste disposal and associated costs.

Three new grant projects will focus on the continuing restoration of Strawberry Creek. Two separate grants will fund the internships and the supplies needed for identifying and planting native species that can resist re-invasion by ivy and still realize the other essential ecosystem services desired by the campus community. The second will expand the Strawberry Creek Student Restoration Leadership Program and will incorporate environmental education outreach, student/community member skill development, and water quality monitoring to prevent pollution Strawberry Creek and foster of environmental stewardship.

## Low Water Irrigation Expanded

Physical Plant – Campus Services is using a TGIF grant to reduce the amount of water used for irrigation. Project leads Gary Imazumi and Matthew Wolter have installed electronic metering and a weather station to provide more accurate and real-time management of campus irrigation systems. When complete, the campus can switch from time-based to flow-based watering, with an estimated savings of 10-15% annually. Another



5% savings will come from the weather station installation that will measure the microclimate at the West Front campus entrance. Since the installation of these devices, alarms from the controllers have already been triggered and alerted Ground Services of needed irrigation repairs, proving the project to be successful. (TGIF Year-End Report)

## Incident Summary – Stanley Hall Diesel Spill

On December 10, 2011 approximately 1,650 gallons of diesel fuel used to power an emergency generator spilled into the basement of Stanley Hall located on the eastern edge of the Central Campus Park. While much of the fuel was contained in building and cleaned up, a portion of the spill entered a storm drain leading to Strawberry Creek by the Wickson Bridge. The fuel was then transported by the creek through the City of Berkeley to the outfall in the San Francisco Bay. Cleanup efforts have been underway since December 10 with oversight by federal, state and local authorities including the U.S. Environmental Protection Agency. U.S. Coast Guard, and State of California Department of Fish and Game. Since the initial spill, much work has been performed, and conditions have improved markedly. On January 31, 2012 overseeing agencies formally concluded the spill response clean-up. Nevertheless, the University and agencies are continuing to closely monitor conditions along the creek and will take additional actions. as needed.



Photo: Kids of the Bay



Photo: Gary Imazuni

## At a Glance

Implementation of the 1987 Strawberry Creek Management Plan has significantly improved water quality.

### The Strawberry Creek Restoration

Program begun in 1987, aims to eliminate harmful discharges to the Creek and provides hands-on training in restoration for university and K-12 students. The program also works to restore three designated Natural Areas on Campus (the Grinnell, the Goodspeed, and the Wickson) through weed removal and native plant re-vegetation. The Strawberry Creek Restoration Program thrives today due to the donated labor and funds of Cal students, staff, and faculty as well as alumni and campus neighbors.

There is a native plant nursery and garden to support the restoration of Strawberry Creek.

In recent years, the campus has converted nearly 60,000 square feet of turf grass area to native or drought tolerant species or to permeable surfaces, reducing the need for irrigation.

At the Richmond Field Station, the campus has finished restoration of five acres of salt marsh habitat and maintenance of upland coastal prairie with the assistance of over seventy student interns completing independent studies in ecological restoration.

The campus has a written Integrated Pest Management plan, which aims to reduce the use of pesticides on all campus grounds.

33

## Academics & Learning by Doing

"I teach medieval literature courses, and it is sometimes helpful for students to understand the effects that medieval economic and social practices had on the landscape." <sup>8</sup>

Medieval English professor

## Academics & Learning by Doing

The campus offers over 30 undergraduate programs related to the environment or sustainability and over 50 graduate degree programs.

In addition to other courses, the campus offers a range of DeCals – classes created and facilitated by students – including the Joy of Garbage and an Energy DeCal.

UNEX has an extensive range of sustainability-related courses and programs, including sustainable design, energy for sustainability, and environmental monitoring.

There are at least 30 student groups active on sustainability-related issues.

UC Berkeley offers a **wide range of degree, course, and service learning options**, which allow students to increase their understanding of the complex issue of sustainability. Our cutting-edge research contributes to finding solutions to existing problems and expands learning outcomes. Grants, class projects, and student organizations help tie what is learned in the classroom and the lab to real world outcomes.

While the campus offers multiple sustainability courses and conducts research in numerous sustainability disciplines, a list of these courses and research work is not currently documented in a single location. The Office of Sustainability plans to update the list of courses and degree programs and also compile additional information on the sustainability-related research being conducted on campus. This list will be a resource to students and others on campus and will also become part of the annual sustainability reporting.

Three TGIF grants will support academic and service learning projects. The CITRIS Sustainability Champion Awards for Undergraduates program will fund five student interns who will be mentored by graduate students and partnered with environmentallyrelated companies to complete hybrid research-job training internships. EcoMovie Nights will offer a monthly environmental documentary series that engages, educates, and inspires the Cal community to get involved with environmental campaigns. Films will be selected based on a monthly theme and followed by theme-centered discussion, facilitated by experts or related student groups. Greening the Berkeley Science Review will use the grant to cover the difference in costs for the BSR to print on 55% recycled-content paper, purchase carbon offsets to cover delivery costs of the BSR, and fund a workshop to share green printing practices with the other 40+ ASUC publications.

## A New Major in Energy Engineering

The College of Engineering now offers a new major — Energy Engineering. Driven largely by undergraduate interest, the major focuses on the generation, transmission and storage of energy, with additional courses on energy policy. The major is interdisciplinary, extracting from the best energy-related courses already offered by the College. The major is offered through the Engineering Science Program and provides the foundation and exposure to energy systems, with the goal to produce undergraduates who are energy systems experts.

## UCB to Develop New Sustainable Chemistry Curriculum

Berkeley's College of Chemistry has received a \$3.5 million gift from the Dow Chemical Company Foundation to design a new curriculum based on the principles of sustainability and green chemistry. The lab curriculum will be revised to incorporate sustainability into every experiment. The funding will also be used to renovate the teaching labs to be more energy-efficient.



Photo: Department of Chemistry

## New Sustainable Development Master's Program

Starting in the fall of 2012, the campus offers a new Master's of Development Practice (MDP), a new multidisciplinary program that integrates theory with hands-on experiential learning. Supported by the MacArthur Foundation, the new program aims to train the future leaders to meet the challenge of sustainable development.

## Curriculum Development Awards Being Offered

The Vice Chancellor for Research now offers curriculum development awards for the newly established Berkeley Energy and Climate Lectures. Awards of up to \$12,000 are available to faculty who develop new survey courses on topics related to energy and climate change. The goal of the new lecture series is to bring the innovative research programs at UC Berkeley and Berkeley Lab to the classroom. Proposals for classes that are team-taught and can provide insights and inspiration to both graduate and undergraduate students are encouraged.

## Alternative Spring Break 2012 Promotes Social Justice

In Spring 2012, Alternative Breaks offered students a service-learning opportunity combining a week-long trip with a semester academic course. Projects focused on topics such as food justice and sustainability, environmental justice, rebuilding the Gulf Coast, and animal welfare.

## Innovation Seed Fund Announces First Awards

In 2011/12, five projects were selected to receive funding from the Innovation Seed Fund, created to advance UC Berkeley research in the renewable energy and energy efficiency domain. The projects include conducting a state-ofthe-art evaluation of the nation's largest residential energy-efficiency program (the Weatherization Assistance Program) and developing a new nanostructured sulfur electrode that overcomes the current barriers to the commercial production of lithium/sulfur cells.

## **Campus Used as a Living Laboratory**

Using an innovative software approach. campus researchers have dramatically increased energy efficiency in Sutardja Dai Hall. Using previously installed metering, Andrew Krioukov, Stephen Dawson-Haggerty, and a partner at Carnegie Mellon created software in a matter of months that is estimated to save \$50,000 per year. The project goals - simplifying management, building increasing occupant comfort, and reducing energy use – are achieved by optimizing building configurations. Using an online interface, the building manager can now adjust any room's temperature easily, and is also able to see which rooms are not meeting



Photo: Alternative Spring Break

optimal temperatures. This way managers can identify problems before receiving a complaint and reduce the time occupants are uncomfortable. The team is currently working with the Energy Office to explore expanding this research to other campus buildings.

## Sustainability Metrics

	1990	1995	2000	2009	2010	2011
Energy & Climate						
Total greenhouse gases (metric tons CO <sub>2</sub> eq.)	163,646	168,318	245,587	188,959	190,390	183,339
GHG Scopes 1&2	114,616	122,466	202,487	148,877	148,774	143,609
Electricity (kWh)	157,105,948	171,709,091	185,666,952	218,515,767	215,307,772	212,878,439
Steam (MMBtu)	806,868	854,475	895,830	978,854	1,000,442	1,061,668
Natural gas (MMBtu)	156,301	162,123	155,331	219,401	202,515	234,432
Renewable energy				100 kW	100 kW	100 kW/ 10,156 therms
Renewable energy certificates (metric tons CO <sub>2</sub> )				136	396	205
Water						
Water (millions of gallons)	739.3	744.8	698.7	639.9	624.7	602.1
Wastewater (millions of gallons)	546.7	512.2	473.9	451.7	452.8	421.5
Food						
Total sustainable purchases (%)				22%/27%	25%/32%	24%/33%

Third-party verified (Climate Registry or LEED)

Peer-reviewed (within the UC system)

## ANNUAL SUSTAINABILITY METRICS: SOURCES AND CHANGES FROM PREVIOUS REPORTS

Data from 2011 CalCAP inventory (September 7, 2012 version) unless otherwise noted (http://calcap.berkeley.edu). Most waste data is from Campus Recycling & Refuse Services. Data are calendar year unless otherwise noted; if fiscal year, data reported in the starting year of the fiscal year (e.g., FY 2008-2009 is reported as 2008). Data marked as "Third-party Verified" has been reviewed by either the Climate Registry or LEED; data marked as "Peer-reviewed" was either generated or reported by the UC Office of the President or developed in accordance UC system-wide standards and policies.

**Greenhouse gases:** "Total greenhouse gas emissions" (the basis for the campus reduction goal) includes Scope 1,2,&3 emissions. "GHG Scopes 1&2" includes direct and indirect emissions only (and excludes optional Source 3 emissions sources). Main changes are the use of different electricity emissions factor for years 1990-1997 and an updated water emissions methodology.

**Electricity:** For years 1990-1997, the campus has adopted the PG&E utility specific emissions factor developed through a 2002 LBNL study commissioned to provide technical assistance to the California Climate Action Registry and the California Energy Commission.

**Renewable energy:** Onsite renewable energy represents a photovoltaic installation on the Student Union and a solar thermal installation at the Maximino Martinez Commons.

Renewable energy certificates: Credits purchased from third party to offset electricity emissions.

**Total Sustainable Food:** Data for 2008 are from Cal Dining only, using the Real Food Challenge criteria. Data for 2009 are from Cal Dining only; 2010 and 2011 data from Cal Dining and two additional campus foodservice vendors. For 2009-2011: first number includes purchases that are locally grown, organic, fair trade, or humane. Second number also includes purchases produced by locally-owned businesses.

	1990	1995	2000	2009	2010	2011
Built Environment						
LEED™ buildings (#/squar	re footage)			2 / 112,042 ft2	7 / 807,968 ft2	9 / 912,861 ft2
			Waste			
Municipal solid waste (MSW) (short tons)		6,414	6,385	4,913	5,001	4,815
Diverted waste (short tons)		1,705	3,157	38,783	10,123	6,192
- Recycled waste		1,705	2,374	2,316	1,962	2,341
- Construction waste				35,249	6,835	2,175
- Composting			783	1,218	1,326	1,675
Diversion rate (%)		21%	33%	42%/89%	41%/67%	46%/56%
Hazardous Waste (tons)		801	341	194.6	170	280
Purchasing						
Total green purchasing (\$)			\$1.5 million	\$6.3 million	\$5.6 million	n/a
Recycled paper purchases (% of total copy, fine, and computer paper purchases)			64%	79%	81%	76%
Recycled content of office furniture (%)						48.6%

Third-party verified (Climate Registry or LEED)

Peer-reviewed (within the UC system)

**LEED™ buildings:** Gross square footage for certified building projects from Judy Chess, personal communication, July 16, 2012.

**Municipal solid waste (MSW):** All waste sent to a landfill, excluding hazardous. All data now being reported on a fiscal year basis. Estimated data for 1990 are no longer being reported.

Diverted waste: Includes recycled, reused, and source-reduced waste, construction waste, and composting.

Recycled waste: Data for 1995 is corrected from previous reports.

**Construction waste:** Waste sent to a landfill/diverted from a landfill from construction and demolition sources. Waste from some construction projects may not be included. Not reported or not reported separately until 2007. This includes waste from some general campus operations.

**Diversion rate:** The higher number is the percentage of all waste that was diverted from a landfill; the lower number excludes construction waste. Previous reports included diversion rates for academic years.

**Hazardous waste:** Variations in hazardous waste due to construction projects, especially demolishing buildings containing asbestos and lead. Source: EH&S hazardous waste database.

**Total Green Purchasing:** Data from UCOP. Includes Energy Star, EPEAT, Green Guard, Green Seal, and recycled content from systemwide contracts only. Some green purchases may not have been included in this total due to inadequate reporting by some vendors. Data are for fiscal years. Data for FY 2010-2011 are not yet available.

**Recycled Paper:** 2007 data from 4/07 - 3/08 for OfficeMax and Radstons; 2008 data from 6/08 - 5/09 for OfficeMax and Radstons; 2009 data from 7/09 - 6/10 for OfficeMax only; 2010 data from 1/10-12/10 for OfficeMax only; 2011 data for 7/11-6/12 for Office Max. All data are based on cost, for paper with a 30% or higher post-consumer recycled content.

**Recycled content of office furniture (%):** Percentage by weight of recycled content of furniture purchased from Steelcase for FY 11-12.

## Sustainability Metrics

	1990	1995	2000	2009	2010	2011
			Transportation			
Fuel usage – commute and fleet (gallons)	3,118,671	3,009,282	2,829,705	2,222,294	2,160,103	2,183,331
Vehicle miles tra- veled – commute	59,216,106	58,170,774	54,990,752	45,407,467	44,410,823	44,805,035
Vehicle miles traveled – fleet				2,132,149	1,864,609	2,095,665
Drive alone rate, faculty/staff (%)	60.0%	54.6%	50.2%	43.1%	43.1%	43.5%
Drive alone rate, students (%)	10.7%	11.8%	8.2%	7.1%	7.1%	6.0%
Green fleet (%)				14.5%	17.9%	21.6%
Air travel (miles)				110,519,178	122,942,318	112,500,176
Other						
Population	44,120	43,509	45,565	50,013	50,085	50,334
Gross Square footage	12,817,517	13,520,471	14,145,728	16,149,539	15,941,137	16,127,722
Research	\$309,755,000	\$333,613,000	\$415,408,000	\$508,059,000	\$524,733,000	\$524,622,000

Third-party verified (Climate Registry or LEED)

Peer-reviewed (within the UC system)

Fuel usage: Includes gasoline for commutes; includes gasoline, diesel, E85, and biodiesel for fleet.

Vehicle miles traveled - fleet: Includes all fleet and shuttle vehicles.

Drive-alone rates: Determined through campus surveys every three years.

**Green fleet:** Includes categories of vehicles as defined in the Energy Policy Act (various) plus hybrid vehicles. Data previously reported in incorrect year. Source: Fleet Services.

Population: Includes students, faculty, and staff. Faculty and staff are in full-time equivalent (FTE).

**Gross Square footage:** Number for 1990 is assumed to be the same as for 1991. Data represents Basic Gross Area for UC Berkeleyowned space. Source: 1990-2009: FASDI, http://fasdi.berkeley.edu; 2010-2011: FacilitiesLink, https://berkeley.digicality.com

**Research:** Research dollar expenditures, in constant 2009 dollars (converted using CPI). Data are fiscal year; 2011 data are preliminary. Source: Personal communications and Controller's Office, Schedule 1-B http://controller.berkeley.edu/FINRPTS/ FinancialSchedules.htm



## Sustainability Goals

The Campus Sustainability Goals and many of the key strategies for meeting them are outlined in the 2009 Campus Sustainability Plan (July 2009), although the campus more recently updated the purchasing and the water reduction goals. The 2009 Plan draws from the below campus planning resources:

- The Cal Climate Action Partnership (CalCAP) manages our greenhouse gas emissions reduction goal and action plan.
- Portions of the 2020 Long Range Development Plan (LRDP) for UC Berkeley – and its accompanying Environmental Impact Report (LRDP EIR) – are included in the 2009 Plan, but more details on how UC Berkeley is reducing its broader environmental impacts are available in the documents themselves.
- The University of California "Sustainable Practices Policy" (UCOP) outlines the system-wide efforts to minimize environmental impacts and increase usage of renewable energy.
- The Strawberry Creek Management Plan (SCMP) continues to improve water quality in Strawberry Creek and provides hands-on training in restoration for university and K-12 students.

Energy & Climate	By 2014, reduce greenhouse gas emissions to 1990 levels. (CalCAP) Achieve climate neutrality as soon as possible. (CalCAP, UCOP)
Water	Reduce potable water use to 10% below 2008 levels by 2020.
Built Environment	Design future projects to minimize energy and water consumption and wastewater production; incorporate sustainable design principles into capital investment decisions; base capital investment decisions on life cycle cost, including the cost of known future expenditures. (LRDP)
Waste	Achieve a 75% diversion rate by June 2012 and zero waste by 2020. (UCOP)
Purchasing	Comply with the University of California environmentally-preferable purchasing policies and procedures. (UCOP)
Transportation	By 2014, reduce fuel use by commuters and campus fleet to 25% below 1990 levels.
Food & Dining	By 2020, increase sustainable food purchases by campus foodservice providers to at least 20%. (UCOP)
Land Use	Plan every new project to serve as a model of resource conservation and environmental stewardship. (LRDP)

## Campus Grants

## 2012 TGIF Grantees (Link to TGIF Grant Award Descriptions)

Berkeley Student Food Collective Food Prep Expansion Expand in-house food preparation Cal Dining Sustainability Team Interns for audits and outreach **CITRIS Sustainability Champion Awards for Undergraduates** Student internships Compost Alliance 2012: Institutionalizing In-House Composting Continued implementation **EcoMovie Nights** Monthly environmental documentary series Food Day 2012 Student interns and materials Getting to Zero Waste: Waste Audits Standardize and perform extensive waste audits Green Garden Program Intern Integrated Pest Management program Greening the Berkeley Science Review Green printing practices and enhancements Installation of Bottle Refill Stations Install 3 stations and 16 retrofits Learning and LEEDing at Cal Certification services for small renovation projects Minimizing Hazardous Waste Through Chemical Exchange Online chemical exchange Nature Village: Sustainable Family Living Sustainability programs at University Village "Out-Moded"- Alternative Transport Marketing & Outreach Conduct survey Recycling on Campus Tennis Courts Bins and outreach for 21 tennis courts Strawberry Creek Planting (Filling the Weed Shaped Hole) Planting native species Strawberry Creek Student Restoration Leadership Program, Phase II Program expansion Student Sustainability Resource Center Permanent resource center Waste Not, Want Not: Zero Waste Events Support for zero waste events Water Conservation in the Greek Community Water conservation competition Wurster Waste Management Indoor recycling program pilot Zero Waste Research Center Address upstream waste issues

## 2012 Green Fund Grant Recipients (Link to CACS Grant Award Descriptions)

Weed 'Em and Reap: Replacing Invasive Plants along Strawberry Creek - Identify and plant native species that can resist re-invasion by ivy and periwinkle, and contribute other benefits to this valuable ecosystem.

**To-Go or Not To-Go? Which Take-Out Food Container is Best?** - Conduct a study to determine the costs and benefits of reusable and biodegradable food containers, and to test the feasibility of a reusable food container program in Cal Dining. **A ReUSE Job for Superman** - Renovate the ReUSE station in Barrows Hall, to give a much-needed facelift to the program's flagship station, nestled in an abandoned phone booth.

**Get Bin Smart** - Educate the campus community about recycling and composting, especially about what is compostable and recyclable, and where to dispose of each type of waste.

**You are What You Read: Learn While You Shop** - Improve the Berkeley Student Food Collective's educational programs by developing in-store displays and posters, and expanding its speaker series by and about local green businesses.

Which Way to the Water Fountain? - Develop signage to improve tap water visibility, and a campaign to educate students about the benefits of drinking tap water versus bottled water.

## Statement of Committment

University of California, Berkeley, students, faculty, and staff are committed to taking a leadership role as responsible stewards of the physical environment and to using educational and research activities to promote environmental awareness, global thinking, and local action. This commitment includes:

- · Protecting and enhancing the campus environment;
- Purchasing environmentally preferable products, minimizing the use of toxic substances, and handling wastes responsibly;
- Conserving natural resources through their sustainable use in building projects, transportation, and campus operations;
- Significantly reducing campus greenhouse gas emissions;
- Conducting innovative research on sustainable technology and practices;
- Increasing awareness of these values through instruction and example; and
- Collaborating with a diverse and engaged campus community on these issues to help fulfill the University's mission.

We are making this commitment because:

- UC Berkeley is a world leader in education and research, and must also be a leader in environmental stewardship;
- Realizing these values will create a healthier educational and work environment;
- Resource conservation helps save valuable resources for future generations and lowers operating expenses; and
- Our commitment serves as the foundation of a system to assess, prioritize, and implement campus environmental programs and sustainability initiatives.

By embracing these values and integrating them into all University activities, we can better fulfill the University's mission of teaching, research, and public service.

November 29, 2007