

2009

UC Berkeley

Campus Sustainability Report



- Energy and Climate
- Water
- Built Environment
- Waste
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- Academics and Learning by Doing

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University of California,
Berkeley

July 2009

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Campus Sustainability Report

About This Report

The goal of the *2009 Campus Sustainability Report* [Report] is to provide a transparent accounting of Berkeley's environmental impacts, focusing on key indicators during fiscal year 2008-2009. The Report covers the University's progress and highlights areas for improvement. This document is integral to understanding the current state of sustainability at UC Berkeley and can be used to inform policies and initiatives related to sustainability.

For more information about previous years, please refer to the [2005 and 2008 Sustainability Assessments](#), since this Report assumes general knowledge about sustainability and sustainability at UC Berkeley. To find out more about current sustainability efforts on campus, visit the updated website at sustainability.berkeley.edu, email the Office of Sustainability at sustainability@berkeley.edu or sign up for the [Bright Green News](#), our sustainability newsletter.

Acknowledgments

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Executive Summary

Addressing the twin goals of transparency and accountability, the *2009 Campus Sustainability Report* is the third in a series of documents that report and assess campus sustainability at UC Berkeley. This year includes a broader discussion of campus goals and the strategies for reaching them, in addition to an expanded set of metrics to measure and recount our progress toward these goals. Current conditions, achievements in the past year, and plans for the coming year are presented, along with highlighted projects and initiatives, which combine to give a sustainability snapshot of campus.

Accomplishments in 2008-2009 have been numerous.

- The list of **Sustainability Goals (p. 4)** reflects the vision of campus sustainability outlined in the new [2009 Campus Sustainability Plan](#). The goals in the Plan, especially the new ones related to campus fuel usage and food and dining, add to the collective statement of how UC Berkeley seeks continuous improvement and sustainability success.
- The expanded and updated **Annual Sustainability Metrics (p. 5)** document overall campus resource usage and progress over time.
- The preliminary results of the 2008 greenhouse gas inventory reveal an increase in emissions of about 1.6% (or 3,300 tons) over the 2007 inventory, even though emissions per square foot dropped by 0.4%. Campus energy efficiency projects, though, were still estimated to have saved 8.5 million kWh. **Energy & Climate (p. 8)**
- Total water usage dropped by 1% last year and has dropped by more than 10% since 1990. More notably, usage per capita has dropped by over 20% since 1990, while usage per square foot has dropped by almost 30%. One recent student project is projected to reduce usage by another 3 million gallons. **Water (p. 12)**
- We currently have one Silver certified LEED™ building, five buildings built to LEED™ standards, and 14 more that are LEED™ registered. The campus has also doubled the number of LEED™ accredited professionals on staff to ten. **Built Environment (p. 15)**
- **Waste (p. 18)** going to the landfill dropped by 1% last year and 8% since 1990, while the amount being recycled and/or composted has more than tripled. In large part due to successful construction waste diversion, the campus met the 2008 target of a 50% diversion rate by June 2008. A student pilot project on paper towel composting in two buildings had a 90% diversion rate.
- Over the past year, the percentage of copy paper purchased with recycled content rose to 74% of total purchases, from 64% last year. A recent informal survey of department buyers showed considerable weight given to environmental concerns in purchasing decisions. **Purchasing (p. 21)**
- Since 1990, the campus has reduced the amount of fuel used in fleet vehicles and during faculty, staff, and student commutes by at least 20%. The percentage of green vehicles in the fleet has nearly tripled since 2006, and the number of miles driven by fleet vehicles has dropped by almost 16%. 500 new bike parking spaces were added in the spring. **Transportation (p. 23)**

Executive Summary

- The University of California system has recently adopted a new policy on sustainable foodservices practices. Using the Real Food Challenge criteria, Cal Dining estimates that sustainable food purchases for the 08-09 academic year were at least 24% of all food and beverages bought. **Food & Dining (p. 26)**
- In June 2009, Physical and Environmental Planning finalized amendments to the UC Berkeley *2020 Long Range Development Plan*, Sustainable Campus chapter, to codify existing commitments to reduce campus contributions to climate change. **Land Use (p. 28)**
- The Office of Environment, Health & Safety and the Residential and Student Services Program (RSSP) are UC Berkeley's first official Green Departments, with several more departments expected to achieve certification in the fall of 2009. **Academics & Learning by Doing (p. 30)**

A list of **Awards and Honors (p. 32)** and the campus' **Statement of Our Commitment to the Environment (p. 33)** are appended to this document.

Sustainability Goals

<u>2009 Campus Sustainability Plan</u> ¹	
Energy & Climate	By 2014, reduce greenhouse gas emissions to 1990 levels. (CalCAP) Achieve climate neutrality as soon as possible. (CalCAP, UCOP)
Water	By 2011 or earlier, set a water reduction goal and analyze and approve feasible water reduction, reuse, and/or recycling projects.
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	By 2011, develop a green purchasing policy.
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)

Below are the sources for both the above goals and the key strategies for meeting them that are described later in this Report:

- The [Cal Climate Action Partnership](#) (CalCAP) manages our greenhouse gas emissions reduction goal and action plan.
- The [2020 Long Range Development Plan](#) (LRDP) for UC Berkeley – and its accompanying [Environmental Impact Report](#) (LRDP EIR) – “presents a framework for land use and capital investment to meet the academic goals and objectives of the university through the year 2020,” and explicitly describes a sustainable campus. Some highlights of the LRDP are included in this Plan, but more details on how UC Berkeley is reducing its broader environmental impacts are available in the documents themselves.
- The [University of California “Policy on Sustainable Practices”](#) (UCOP) outlines how the entire system will minimize environmental impacts and increase usage of renewable energy.
- The [Strawberry Creek Management Plan](#) (SCMP) continues to improve water quality in Strawberry Creek and allows locally native fish populations to flourish.

¹ [2009 Campus Sustainability Plan](#), July 2009.

Sustainability Metrics

Measuring the right process or outcome is crucial to developing and maintaining more sustainable institutions. UC Berkeley has developed a set of Sustainability Metrics, first reported in the [2008 Campus Sustainability Assessment](#). These Metrics have been updated and expanded for this *2009 Campus Sustainability Report*, and will be updated annually in subsequent Reports. The Office of Sustainability commits to developing additional metrics as required, including appropriate normalizing factors to better benchmark our progress.

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

UC Berkeley is guided by both a broad definition of sustainability and a commitment to transparent reporting. While this Report concentrates on transparency for traditional environmental indicators – such as energy and water usage and recycling – UC Berkeley separately reports on social and economic measures of sustainability.

These additional gauges of sustainability are reported through the [University of California Accountability Report](#), first published in May 2009. Designed to “ensure greater accountability across the UC system²,” the report includes data on undergraduate affordability and access, student experience and profiles, as well as research, budget, and finance.

The main source for the data presented in this Report is the Cal Climate Action Partnership greenhouse gas emissions inventories. Some of this data has changed since last year, due to increasing the accuracy and precision of data and methodologies. These changes will be documented through the [CalCAP website](#). In addition, some of the 2008 data is still preliminary, pending third-party verification. Non-CalCAP data sources are referenced separately. Data are not available for all years, so some annual entries are left blank.

Additional metrics will be evaluated for inclusion in future reports:

- data on water quality
- purchases of green products
- number of students enrolled in sustainability courses
- number of alumni employed in sustainability fields
- number of certified Green Departments and Green Events

² *University of California Annual Accountability Report, May 2009*, <http://www.universityofcalifornia.edu/accountability/>

Sustainability Metrics

Annual Sustainability Metrics for UC Berkeley^a

	1990	1995	2000	2006	2007	2008
Energy & Climate						
Greenhouse gases (metric tons CO ₂ E)	167,398	171,679	261,449	205,323	206,719	209,998
Electricity (kWh)	153,681,818	171,709,091	185,666,952	212,827,845	208,350,123	213,729,043
Steam (MMBtu)	844,972	894,828	938,135	1,022,141	1,078,035	1,085,850
Natural gas (MMBtu)	153,091	162,123	155,331	238,879	197,750	189,120
Renewable energy (kW) ^b				59	59	59
Purchased electricity (% renewables) ^c	18%	18%	5%	12%	13%	15%
Water						
Water (millions of gallons)	504.2	507.3	491.0	485.4	450.8	446.2
Wastewater (millions of gallons)	382.2	346.0	328.5	347.8	318.0	314.7
Built Environment						
LEED TM buildings (#/square footage) ^d						1 / 11,068 ft ²
Waste						
Solid waste (short tons)	6,973	7,187	6,637	6,634	6,689	6,427
Diverted waste (short tons) ^e		1,075	3,157	3,219	8,061	4,535
- Recycled waste		1,075	2,374	2,000	2,629	2,760
- Construction waste					4,038	94
- Composting			783	1,127	1,394	1,682
Diversion rate (%) ^f		21%	33%	34%	57%	42% / 95%
Hazardous Waste (tons) ^g		801	341	205	152	
Transportation						
Fuel usage – commute and fleet (gallons)	3,119,155	3,009,851	2,830,375	2,522,949	2,571,443	2,459,121
Vehicle miles traveled – commute	59,216,106	58,170,774	54,990,752	51,525,871	52,807,839	50,661,749
Vehicle miles traveled – fleet				2,457,893	2,284,422	2,075,851
Drive alone rate, faculty/staff (%) ^h	60.0%	54.6%	50.2%	47.1%	47.1%	47.1%
Drive alone rate, students (%) ^h	10.7%	11.8%	8.2%	8.0%	8.0%	7.1%
Green fleet (%) ⁱ				3.7%	5.7%	10.9%
Air travel (miles) ^j				113,495,456	116,394,265	116,892,152
Other						
Population ^k	44,120	43,509	45,565	48,700	49,138	49,567
Square footage ^l	12,817,517	13,520,471	14,145,728	15,464,279	15,675,971	15,986,234

Sustainability Metrics

Footnotes and Sources: Annual Sustainability Metrics

^a All data from 2009 CalCAP inventory unless otherwise noted. Source: <http://calcap.berkeley.edu>

^b Onsite renewable energy (kW) represents a photovoltaic installation on the MLK, Jr Student Union

^c Purchased electricity (% renewables) is the percentage of purchased electricity from our utility provider(s) sourced from renewable energy. 1995 is assumed to be the same fuel source distribution as 1990.

^d Source: Facilities & Spatial Data Integration at UC Berkeley (FASDI), <http://www.fasdi.berkeley.edu>

^e Diverted waste includes recycled waste, diverted construction waste, and composting. Source: Campus Recycling & Refuse Services.

^f For consistency with reporting to the UC Office of the President, diversion rates are for academic years and are not directly calculated from the tonnage numbers reported in this table. The 2008 diversion rate is based on preliminary data and is reported as two numbers. The higher number includes a large amount of soil that was diverted from a construction project, while the lower number does not.

^g Variations in hazardous waste due to construction projects; 2008 data are not yet available. Source: Pat Goff, personal communication, June 19, 2009, from multiple Hazardous Waste Source Reduction and Management Reviews.

^h Drive-alone rates are determined through campus surveys every three years.

ⁱ "Green" fleet designation includes categories of vehicles as defined in the Energy Policy Act (various) plus hybrid vehicles. Source: Fleet Services.

^j Business air travel miles were inadvertently miscalculated for the *2008 Campus Sustainability Report* due to the exclusion of some trips. Calculations of air travel greenhouse gas emissions were not affected by this omission.

^k Population includes students, faculty, and staff.

^l Square footage for 1990 is assumed to be the same as for 1991. Source: FASDI, <http://www.fasdi.berkeley.edu>

Energy & Climate

Current Conditions UC Berkeley has already set an ambitious greenhouse gas emissions reductions target and identified multiple strategies for achieving this target through the Cal Climate Action Partnership (CalCAP). The preliminary results of the 2008 greenhouse gas inventory (see Figures 1 and 2) reveal an increase in emissions of about 1.6% (or 3,300 tons) over the 2007 inventory, even though emissions per square foot dropped by 0.4% (returning to the same level as in 1990).

Electricity usage (kWh) in 2008 increased by 2.6% over 2007, although emissions from electricity went up 7% due to changes in the power source mix provided by the utility. Steam emissions and use rose slightly, although natural gas use dropped by over 4%. Emissions from commuting and campus fleet also dropped. One notable change over previously reported results is the increase in emissions from faculty/staff commute in 1990 that resulted from correcting a small error in the calculations³.

Figure 1: UC Berkeley Emissions by Source, 2008

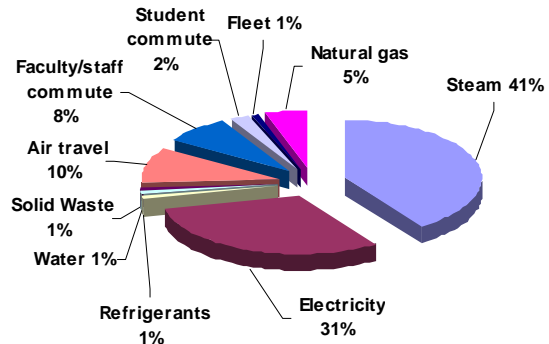


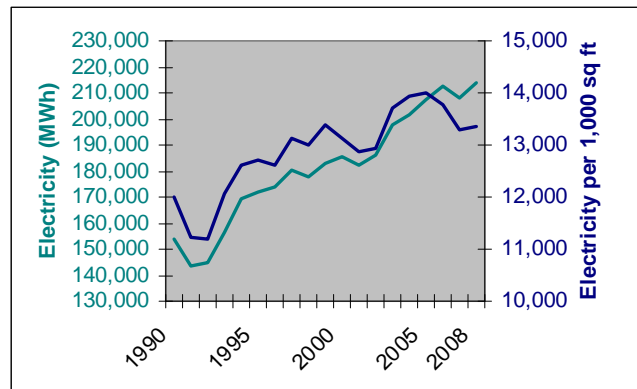
Figure 2: Energy Usage & Greenhouse Gas Emissions at UC Berkeley, 1990-2008

	1990	1995	2000	2006	2007	2008
Greenhouse gases (metric tons CO ₂ E)	167,398	171,679	261,449	205,323	206,719	209,998
Electricity (kWh)	153,681,818	171,709,091	185,666,952	212,827,845	208,350,123	213,729,043
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Natural gas (MMBtu)	153,091	162,123	155,331	238,879	197,750	189,120
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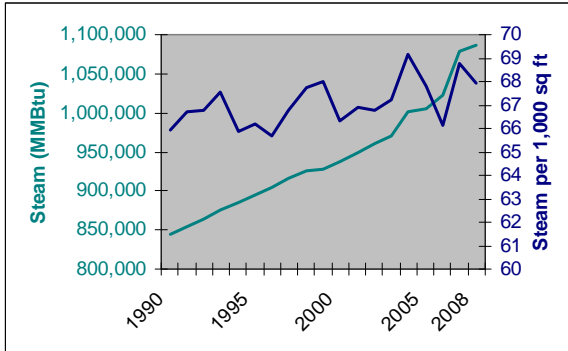
Campus Electricity Use Increased in 2008 by 2.6%...
but usage per square foot shows campus buildings getting more efficient in recent years.



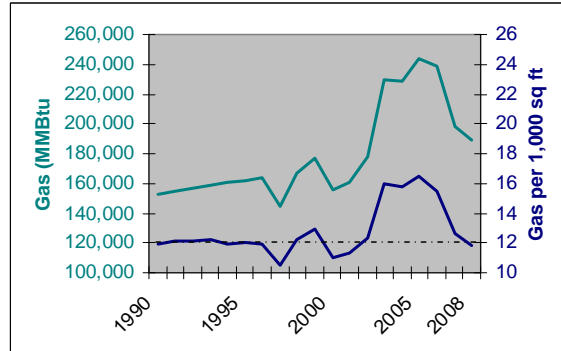
³ More information on the 2008 and previous inventories is available at <http://calcap.berkeley.edu/>

Energy & Climate

Steam Usage Leveling Off...
although usage per square foot is
less predictable.



Gas Usage Down by 0.4%...
and usage per square foot
below 1990 levels.



Achievements

Campus Energy Efficiency Projects save 8.5 million kWh

Between 2007 and 2008, the campus provided \$4.1 million in funding for twenty energy efficiency projects as part of the 2006-2008 UC/IUO Energy Efficiency Partnership program. These projects are anticipated to save 8.5 million kWh in electricity and 111,000 therms annually, for an emissions reduction of about 3,200 tons and a cost savings of almost \$1 million. The cumulative average payback for the projects is estimated to be 1.6 years.

It is estimated that about 75% of the campus incandescent lights have been converted to compact fluorescent lamps or replaced with efficient fluorescent fixtures. A few incandescent fixtures on campus have not been converted due to specific circumstances, such as lights controlled by a dimming system (e.g., auditoriums); areas where the art, books, artifacts, and other collections displayed or stored are sensitive to fluorescent lighting; display areas where a more focal, spotlight not available in CFLs is required; or closets, storage, and mechanical rooms where the hours of operation are very low.

Student Energy Efficiency Projects save 3 million kWh

In addition to the partnership, numerous student groups have undertaken projects to increase energy conservation and efficiency. For example, from 2004 to 2008, the Green Campus Program has reduced energy usage by almost three million kWh through programs in residence halls, laboratories, and other campus buildings.

Berkeley Energy Symposium draws attendance of 500+

The third annual [UC Berkeley Energy Symposium](#), "Bold Ideas for a New Energy Landscape," explored the cutting edge science and policy that will craft the future energy landscape. Bringing together more than 500 world-class researchers, business leaders, policy makers, and students, the Symposium presented challenging discussions about real, near-term energy solutions.

Energy & Climate Goals

- **By 2014, reduce greenhouse gas emissions to 1990 levels (CalCAP)**
- **Achieve climate neutrality as soon as possible (CalCAP, UCOP)**

Key Strategies:

1. Reduce systemwide growth-adjusted energy consumption by 10% or more by 2014 from the year 2000 base consumption level. (UCOP)
2. Work on UC system goal to provide up to ten megawatts of local renewable power by 2014. (UCOP)
3. Procure 20% of electricity needs from renewable sources by 2010. (UCOP)
4. Develop a campus standard for sustainable design specific to our site, climate, and facility inventory. (LRDP)
5. Update the *Campus Design Standards* and set a campus-wide energy policy.
6. Implement strategies and actions identified in the UC Berkeley *2009 Climate Action Plan* and future climate action plans.
7. By 2011, set next interim greenhouse gas emissions reduction target for 2020 or 2025.
8. Develop criteria for defining climate neutrality for the campus and a target date for reaching neutrality.

Plans The campus has committed to completing approximately 200 energy efficiency projects through our [Strategic Energy Plan](#) (SEP), largely consisting of lighting, HVAC, and commissioning measures. The SEP includes additional energy efficiency projects including:

- Energy efficiency measures in new construction and renovated buildings
- Refrigerator and CRT monitor replacement program
- Use of computer power management systems for networked computers.

These 200 projects will cost \$25 million in total (although the campus will receive \$9 million in incentives from PG&E) and will yield cost savings of at least \$3 million per year and a 23,000 ton reduction in emissions.

The recently completed [2009 Climate Action Plan](#) focuses on how UC Berkeley will achieve its 2014 CalCAP goal to reduce 2014 emissions to 1990 levels. It includes several mitigation and funding scenarios and a plan for education and outreach. The document describes projects in 17 categories that should result in a reduction of 32,500 tons of CO₂ equivalent – or over half of what is needed to meet the 2014 target. Importantly, the plan also lays out strategies for identifying and reducing the remainder of the emissions necessary to meet our target with minimal or no purchases of renewable energy credits.

2008-2009 Highlights

Award Winner

Tang Student Health Center The monitoring-based commissioning of the Tang Student Health Center received a 2009 Best Practice Award from the University of California. The measured savings from the installation of a new building automation system and other upgrades include a 32% reduction in electricity use, a 28% reduction in natural gas use, and a reduction in greenhouse gas emissions of 240 metric tons of CO₂ equivalent.

Legal Planet [Legal Planet](#) is a blog begun in 2009 to analyze climate change, energy, and environmental law and policy. A joint project of the UC Berkeley and UCLA Schools of Law, this collaborative blog bridges law and policy and aims to translate the latest thinking and research for a mass audience. Recent contributions include discussions on war and the environment, fishing catch shares, and federal and state cap and trade legislation.

Grant Winner

2009 CACS Green Fund Grants Two of this year's [Chancellor's Advisory Committee on Sustainability](#) (CACS) grants were awarded to projects to reduce campus energy use. "It's a Green Campus After All" (or expansion of Green Campus projects) will continue the work of the Green Campus team on educating the UC Berkeley community about energy conservation. "Is it Just Hot Air or Time to Throw in the Towel?" will evaluate hot air versus paper towel hand drying in high-volume public restrooms in the Lawrence Hall of Science.

Award Winner

Professor Dan Kammen Dan – as he asks everyone to call him – was a recipient of a CACS 2009 Sustainability Award. He is a tireless advocate of sustainability, renewable energy, and progressive solutions at the local, state, national, and international levels. His research makes him a nationally-recognized expert, yet he maintains an active role as a teacher and a voice for a more sustainable campus. Dan is the founding director of the [Renewable and Appropriate Energy Laboratory \(RAEL\)](#). Professor Kammen teaches multiple classes with a sustainability focus and advises a large number of graduate students and is an active member of the CalCAP Steering Committee.

CoolClimate Carbon Calculator The [CoolClimate Calculator](#) was designed by researchers at the Berkeley Institute of the Environment to help U.S. households evaluate their complete climate footprints, including all direct and indirect greenhouse gas (GHG) emissions from transportation, household energy, food, goods and services. Users of the tool can compare their results to typical households in their [city or region](#), and to households with similar [size and income](#), and U.S. and global averages. A recent update provides recommendations that shows actions users can take to save both money and greenhouse gases.

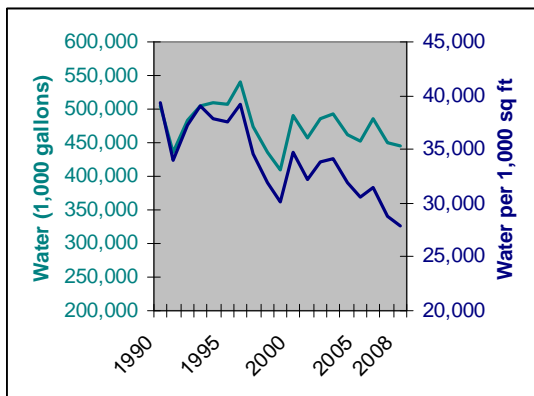
New Lighting at Rec Sports Have you noticed that the lights in the RSF Field House are quite a bit brighter? Rec Sports has completed an upgrade of their lighting systems that will reduce energy use, lower maintenance costs, and provide better quality lighting in the gyms. New high efficiency, high output fluorescent lamps and transformers were installed, along with occupancy sensors so that lights will automatically switch off when an area has been unoccupied for 20 minutes. Increasing energy efficiency by installing new lighting equipment has been one of the quickest and least expensive ways to reduce electrical demand, in this case by 252,000 kWh of electricity per year. Rec Sports has also started projects to reduce water usage and other sustainability projects as part of their [PlayGreen initiative](#).

Water

Current Conditions Total campus water usage dropped by 1% last year and has dropped by more than 10% since 1990, even in the absence of a water conservation target. More notably, usage per capita⁴ has dropped by over 20% since 1990, while usage per square foot has dropped by almost 30%. Much of this improvement can be attributed to the increased efficiency of irrigation, implementation of building codes related to low-flow fixtures, and improvements during building renovations⁵. This downward trend could still be extended, especially given the current drought conditions in California.

Figure 3: Water Usage at UC Berkeley, 1990-2008

	1990	1995	2000	2006	2007	2008
Water (millions of gallons)	504.2	507.3	491.0	485.4	450.8	446.2
Wastewater (millions of gallons)	382.2	346.0	328.5	347.8	318.0	314.7



Water Use Dropped in 2008 by 1.0%... and usage per square foot has dropped by almost 30% since 1990.

Achievements

Installing faucet aerators saves 3 million gallons

The Building Sustainability at Cal program completed audits of sink aerators in the public restrooms of thirteen buildings. They identified more than 300 faucets whose flow was greater than 1.0 gallons per minute (gpm) – either because there was not an aerator in place or because the existing aerator was flowing at a higher rate. In spring 2009, East Bay Municipal Utility District donated 0.5 gpm aerators for these faucets. The students then partnered with the campus plumbing shop to install the aerators. These efforts are estimated to save almost three million gallons per year and payback the campus investment in approximately two months.

⁴ Population includes students, faculty, and staff.

⁵ One striking example was a renovation of the Valley Life Science Building (VLSB) in 1994-1995. In part by eliminating the use of once-through cooling systems, water use in VLSB was reduced by 80%.

Water

Hydration Stations encourage usage of tap water over bottled water

In March 2009, the Recreational Sports Facility installed two “hydration stations,” which fill water bottles twice as fast as a regular drinking fountain, outside their weight room and martial arts area. In partnership with University Health Services (UHS), and the Office of Environment, Health & Safety (EH&S), Rec Sports added the stations to support wider use of reusable water bottles and help to eliminate the environmental impacts of plastic single-use bottles. In fact, these two stations were designed specifically for Rec Sports.

Water Goal

By 2011 or earlier, set a water reduction goal and analyze and approve feasible water reduction, reuse, and/or recycling projects

Key Strategies:

1. Convene a steering committee composed of faculty, staff, and students to conduct a feasibility study and an analysis of possible projects and targets.
2. Identify and implement cost-effective water projects, especially those that also reduce campus energy use.
3. Include at least two Water Efficiency Credits as mandatory credits for new construction projects.

Plans In addition to several classes, student groups, and existing projects, two campus bodies will be focusing on water usage and quality in the coming year. The Chancellor’s Advisory Committee on Sustainability has begun discussions around at least three water topics: use in buildings, water quality/landscaping use, and bottled water. Another new initiative, Cal H₂O, is currently clarifying its goals and mission, and intends to evaluate feasible avenues to increase the sustainability of the UC Berkeley campus water system.

2008-2009 Highlights

I Heart Tap Water [I Heart Tap Water](#) is a collaborative campaign between Cal Dining, Recreational Sports, EH&S, and University Health Services to promote the drinking of tap water as the preferred beverage of choice. Supported by a grant received last year from The Green Initiative Fund, the campaign encourages faculty, staff, and students to pledge to use refillable water bottles and over 1,000 have done so to date. The campaign also assessed the water quality of over 450 water fountains around campus.

Berkeley Water Center The [Berkeley Water Center](#) (BWC) promotes and supports collaborative water-related research. They seek to develop and demonstrate the application of new concepts, information and engineering technology, and computational tools that serve diverse water interests. The BWC is composed of researchers from several UC Berkeley Colleges and Departments, including more than 70 faculty members with water-related expertise. Their interdisciplinary approach makes the Center the single integrated resource for water-related research on campus.

Water

Watch Us Go Green The purpose of the energy and water conservation campaign titled “[Watch Us Go Green](#)” is to foster awareness of sustainability on campus. The outreach materials in this campaign provide a series of green tips to inform the campus audience of what they can do to conserve, and at the same time point them to more information on sustainability. The posters and postcards have been displayed in public areas and library carrels in most campus buildings, including California Hall.

Grant Winners

2009 TGIF Grants Of the ten proposals funded this year by [The Green Initiative Fund](#), two will impact water use and quality on campus: “No More Down the Drain” (ASUC Art Studio) will install a sand and sediment trap to reduce and recycle clay and glazes, and “Water Metering and Sub-metering of UC Campus Buildings” (Berkeley Institute of the Environment) will update water meters on several buildings and install efficient toilets in Wurster Hall.



Built Environment

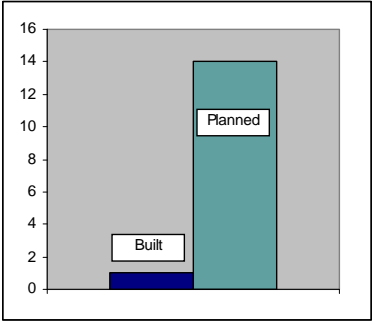
Current Conditions Given that 65% of water consumption and almost 80% of greenhouse gas emissions are associated with the operation of campus buildings, UC Berkeley will invest heavily in strategies within the built environment to accomplish its energy, climate, and water goals. UC Berkeley has one Silver certified LEED™ building (New Construction), which represents less than 1% of the total campus, although another five buildings (totaling 686,000 square feet) have been built to LEED™ standards. An additional 14 buildings have registered for either LEED™-New Construction or LEED™-Existing Buildings Operations and Maintenance.

Figure 4: Green Buildings at UC Berkeley, 1990-2008

	1990	1995	2000	2006	2007	2008
LEED™ buildings (#/square footage) ^a						1 / 11,068 ft ²

^a Square footage for the Haste Street Child Development Center from Facilities & Spatial Data Integration at UC Berkeley (FASDI), www.fasdi.berkeley.edu

Campus has one LEED™ certified building and 14 in various stages of planning.



Achievements The campus has doubled the number of LEED™ accredited professionals on staff to ten and will continue to aggressively encourage staff to pursue this training opportunity. In addition, a LEED™ DeCal course in Spring 2009 was student-taught and attended by four campus project managers.

The occupants of University Hall have begun an initiative to Go Green!, with LEED™ for Existing Buildings: Operation & Maintenance (EBOM) certification and optimizing energy performance as main goals. Through a CACS Green Fund grant, the University Hall Green Team has purchased over 150 compact fluorescent task lights and distributed them throughout the building. They have also educated building occupants on the benefits of using task and/or day lighting as well as recycling procedures for compact fluorescent bulbs. By incorporating task lighting, occupants of University Hall will be able to control and vary the amount of light they receive, thereby improving office ergonomics.

The Office of Environment, Health & Safety and Facilities Services offered training on LEED™ for Existing Buildings, Operation, and Maintenance in June and July 2009. Open to all employees, the training will help those who are working to achieve LEED™ certification for their buildings or interested in getting accredited. There is also a campus LEED EBOM user group that meets monthly.

Built Environment Goals

- **Design future projects to minimize energy and water consumption and wastewater production (LRDP)**
- **Incorporate sustainable design principles into capital investment decisions (LRDP)**
- **Base capital investment decisions on life cycle cost, including the cost of known future expenditures (LRDP)**

Key Strategies:

1. All new building projects [will] outperform the required provisions of the California Energy Code ([Title 24](#)) energy-efficiency standards by at least 20%. (UCOP)
2. Design and build all new buildings to a minimum standard equivalent to a LEED™ 2.1 Silver rating, and strive to achieve a standard equivalent to a LEED™ Gold rating or higher, whenever possible within the constraints of program needs and standard budget parameters. (UCOP)
3. Design and build all new laboratory buildings to the same LEED™ standard and/or the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria (EPC), as appropriate. (UCOP)
4. Large renovation projects [as defined by UCOP] should at minimum comply with UC equivalent to LEED™ Commercial Interiors or New Construction certified rating and register with Savings by Design program. (UCOP)
5. Submit one pilot building for LEED™ Existing Buildings certification.
6. Include at least two LEED™ Water Efficiency Credits as mandatory credits for new construction projects.
7. Investigate the Volume Certification approach to LEED™ Existing Buildings.
8. Maximize use of monitoring-based recommissioning as a tool to reduce building energy use.

Plans Facilities Services has launched an innovative training program that is open to building managers, project managers, and Physical Plant trades staff. The Campus Existing Building Commissioning training offers hands-on and detailed half-day courses designed to acquaint the attendees with the commissioning process, illustrate its power to improve performance and save resources, and connect attendees with resources to help them understand the process steps and benefits in more detail. Individual course offerings include HVAC fundamentals, pump theory and systems, and indicators of commissioning opportunities. This opportunity was made possible through the award of a grant from the local green building authority and will build persistence into the energy savings expected as a result of the campus Strategic Energy Partnership projects.

Campus will continue to expand the number of building projects that achieve LEED certification. For major projects, each major building project undertakes a 'sustainable design workshop' or 'eco-charette' during the project planning or early design phase. This activity is a crucial opportunity for building users, campus staff and technical experts to articulate a sustainability program for the project and to develop an integrated approach to assuring that the project design includes appropriate best practices measures and approaches.



Built Environment

Facilities Services is working to identify several campus-wide credits that will be submitted for LEED™ certification as volume credits. Once that occurs, subsequent building projects will not have to re-submit applications for these campus-wide credits, but will only have to confirm that the project is following the applicable campus practice. This is expected to greatly streamline the LEED™ certification process in terms of time and expense, resulting in more projects being certified. Physical Plant-Campus Services (PPCS) has tasked several staff and student employees to identify and document campus-wide practices for LEED™ EBOM. They are also working with the Building Sustainably at Cal service learning program to develop and implement projects that will help campus achieve both building-specific and campus wide credits in several areas including grounds maintenance, custodial services, and purchasing.

2008-2009 Highlights

Award Winner

Judy Chess Judy Chess (Assistant Director for Green Buildings) received a 2009 Special Recognition Sustainability award from the Chancellor's Advisory Committee on Sustainability (CACS). Judy Chess served as CACS co-chair for over a year and helped to institutionalize CACS activities into on-going campus operations. Her leadership helped CACS conceive, design, and develop the Cal Climate Action Partnership and the campus' first greenhouse gas reduction goal. Judy works to incorporate sustainability into the fabric of the university, from policy (by incorporating green aspects into many facets of the campus design standards) to practice (by choosing to ride her bike to work).

Grant Winner

Center for Latin American Studies The Green Initiative Fund awarded a grant to the Center for Latin American Studies in 2009 to conduct a professional assessment and hire a student as part of a bid to achieve LEED™-Existing Building Operations and Maintenance certification.

The Secret Life of Buildings (ARCH 249X) This architecture class is an exploratory seminar addressing the post-occupancy performance of buildings. Students are examining architectural, lighting, and mechanical systems in existing buildings with attention to energy use, occupant well being, and architectural spacemaking. In Spring 2009, students examined lighting, ventilation systems, and possible behavioral changes through projects in Wurster Hall and posted their reports and findings [online](#).

Waste

Current Conditions UC Berkeley has already committed to ambitious waste reduction goals through the University of California Office of the President’s “[Policy on Sustainable Practices](#)” (UCOP). Tonnage going to the landfill has dropped by 8% since 1990, while the amount being recycled and/or composted has more than tripled. Since last year, the amount of waste sent to a composter rose by 20%. While the campus met the 2008 target of a 50% diversion rate by June 2008, the progress seen in the last decade does not, however, put the campus on a trajectory sufficient to achieve future goals. Additional effort and new initiatives will be required to reach a 75% diversion rate by 2012.

Hazardous waste generation has varied over time, mostly due to construction waste. Total generation in 2006 increased by 3.3% since 2002, but decreased by 8% per square foot of laboratory space.

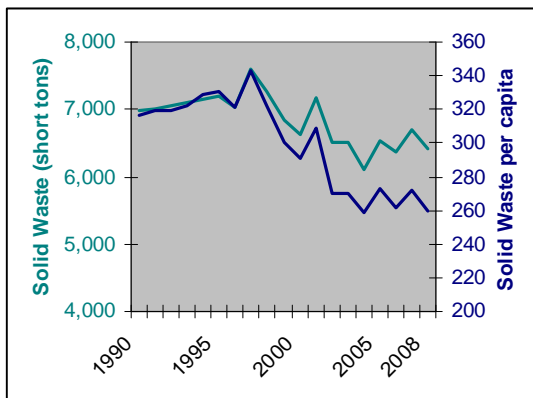
Figure 5: Solid Waste at UC Berkeley, 1990-2008

	1990	1995	2000	2006	2007	2008
Solid waste (short tons)	6,973	7,187	6,637	6,634	6,689	6,427
Diverted waste (short tons) ^a		1,075	3,157	3,219	8,061	4,535
- Recycled waste		1,075	2,374	2,000	2,629	2,760
- Construction waste					4,038	94
- Composting			783	1,127	1,394	1,682
Diversion rate (%) ^a		21%	33%	34%	57%	42% / 95%
Hazardous waste (tons) ^c		801	341	205	152	

^a Diverted waste includes recycled waste, diverted construction waste, and composting. Source: Campus Recycling and Refuse Services.

^b For consistency with reporting to the UC Office of the President, diversion rates are for academic years and are not directly calculated from the tonnage numbers reported in this table. The 2008 diversion rate is based on preliminary data and is reported as two numbers. The higher number includes a large amount of soil that was diverted from a construction project, while the lower number does not.

^c Variations in hazardous waste due to construction projects; 2008 data are not yet available. Source: Pat Goff, personal communication, June 19, 2009, from multiple Hazardous Waste Source Reduction and Management Reviews.



**Solid Waste Dropped in 2008 by 1.0%...
and usage per capita has dropped by over
20% since 1990.**

Achievements

Student project on paper towel composting results in 90% diversion

Building Sustainability at Cal interns conducted a pilot restroom paper towel composting program in two campus buildings. Their goal was to create a model that buildings could follow to divert this waste from landfills and to compile data and a narrative of running a paper towel composting program for future implementation. Their end of year presentation showed that the one-month pilot diverted over 90% of the generated paper towels (325 pounds).

Waste

Recycling supplies raises awareness and lowers costs and waste

The Wurster Hall Energy and Waste student-initiated project was funded through a 2008 CACS Green Fund Grant. The small grant award was used to recycle usable architectural supplies, instead of discarding them at the end of the semester by students under pressure to vacate studios. Collected supplies can now be given to next semester's incoming architectural students free of charge. This program included significant outreach to building occupants, including the creation of art from used coffee cups to demonstrate the magnitude of the waste. Another 2008 CACS grant helped the Campus Recycling and Refuse Services create eight new mini-reuse stations for office supplies this year.

Hazardous waste minimization continues to show results

The campus has continued to improve and expand on its hazardous waste minimization programs. Recent grants have funded the reuse of a campus electric vehicle and the installation of a poster that advertises the campus chemical exchange program. The compactor will significantly reduce the volume of hazardous waste leaving the campus.

Tech trash (electronic devices, batteries, non-incandescent light bulbs) is a growing challenge to the campus. This waste is generally considered by regulations to be less hazardous and is classified as universal waste, but still must be collected and managed safely. The campus efforts have resulted in collecting 36,600 pounds in 2008, up 1,000 lbs from 2007.

Waste Goals

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

Key Strategies:

1. Fund and implement the CalCAP project to expand the campus composting program.
2. Continue to increase mixed paper recycling from campus buildings and recycling of construction/demolition materials.
3. Add more outdoor recycling and composting bins on campus grounds.



Plans UC system-wide Strategic Sourcing is working with campus suppliers to support waste-reducing printing practices. Local account managers and service technicians will be providing instructions on how to change the default settings to auto duplex printing, how to override the duplex setting for single sided documents and how to expand the printable surface of pages by decreasing margins and increasing the print area by up to 32%.

Waste

During the summer and fall of 2009, UC Berkeley departments will be vacating the Marchant building, which has been used by the campus for almost three decades. While many items currently housed or stored in the building will be moved to new locations, the campus has challenged itself to divert 75% of the unused waste items and is working with the Choose to Re-Use student program to accomplish the goal.

One special project that will significantly reduce the amount of corrosive hazardous waste sent off campus is being undertaken by the new nano-fabrication facility — the [Center for Information Technology Research in the Interest of Society](#) at Sutardja Hall. The project involves tanks and complex engineering that effectively neutralizes more than 100 gallons per month of corrosive waste.

2008-2009 Highlights

Award Winner

Building Sustainability at Cal The Building Sustainability at Cal (BS@C) Program – a student-initiated and -run program – received a 2009 Sustainability award for training students to help reduce the environmental footprint of campus buildings. Their students educate building inhabitants and identify structural and operational changes that can be made to buildings and campus operations. The program started in May 2007 with one student in one building and has expanded to 40 students working in 23 buildings and four campus-wide projects. A pilot program has also taken the campus activities out into the community by working in the City of Berkeley Civic Center building. In addition to greening the campus, this program is training a generation of people who will have the knowledge and expertise to evaluate the environmental impact of existing buildings.

Grant Winners

2009 TGIF Grants Of the ten proposals funded this year by [The Green Initiative Fund](#), three will reduce the amount of campus waste sent to the landfill. “Better Bin” (Berkeley Innovation) will develop and pilot a bin to separate recycling and trash in residence hall rooms. “Recycling at Cal” (Campus Recycling and Refuse Services) will increase can/bottle recycling by installing new outdoor recycling containers. “Wurster Hall Composting” (Housing and Dining Services) will install a new sink in Ramona's Café to begin a composting program in Wurster Hall.

Grant Winners

2009 CACS Green Fund Grants Two waste-reducing grants were awarded by [CACS](#). “You Gotta Carry that Weight” (EH&S) will replace an unreliable, inefficient pneumatic trash compactor used for laboratory debris with a better drum compactor currently located in an inconvenient place. “Taking Out the Recycling” (Residential and Student Services Programs) will provide totes to the residents of University Village and Smyth-Fernwald, allowing easier separation of recyclables from non-recyclables, and will create multilingual signs at each recycling collection location.

Purchasing

Current Conditions Numerous environmentally-preferable purchasing practices for campus have been identified, and implementation has already begun. In line with UCOP policy, UC Berkeley recognizes the need to analyze and evaluate purchasing decisions based on full lifecycle costing or “cradle to cradle” supply chain management. The practice of computing the lifecycle cost – of production, operation, and disposal – is an important but information-intensive tool when making purchasing decisions.

Achievements

Most departments consider the environment, purchasing \$1.5 million of green products

A recent informal survey of department buyers about upcoming refrigerator purchases (46 respondents) showed considerable weight given to environmental concerns in purchasing decisions (with a 3.4 average on a scale from 1 to 4)⁶. Another indicator of overall interest in green purchasing is the approximately 23% of office supply purchases in FY07-08 having some level of recycled content⁷. During that same time frame, the campus purchased at least \$1.5 million of green products⁸.

Recycled paper use on the rise

Over the past year⁹, the percentage of copy paper purchased with recycled content rose to 74% of total purchases, from 64% last year¹⁰. This increase is driven by many factors, including the drop in the price of copy paper with 30% post-consumer recycled content.



⁶ Ryan Dash, May 11, 2009, “A Refrigerator Replacement Feasibility Study at the University of California, Berkeley.”

⁷ Purchases from OfficeMax only for Fiscal Year 2007-2008.

⁸ Data from UCOP. Includes Energy Star, EPEAT, Green Guard, Green Seal, and recycled content for Fiscal Year 2007-2008. Some green purchases may not have been included in this total due to inadequate reporting by some vendors.

⁹ Compares data from 4/07 – 3/08 to 6/08 – 5/09.

¹⁰ Percentages are based on purchases from Office Max and Radstons only, on a cost basis.

Purchasing Goal

By 2011, develop a green purchasing policy

Key Strategies:

1. Preferential purchase of Energy Star® appliances and equipment, with energy efficiency and conservation features enabled. (UCOP)
2. Standard of 30% post consumer waste (PCW) recycled content paper for office use and 100% PCW recycled content for uncut paper, including janitorial supplies. (UCOP)
3. Increasing the procurement of other products with high recycled content. (UCOP)
4. Work to phase in Green Seal Products. (UCOP)
5. Purchase electronics products that have achieved EPEAT registration. (UCOP)
6. Minimize packaging waste. (UCOP)
7. Establish take-back programs for packaging of electronics and other products and give preference to take-back programs that are provided free of charge. (UCOP)
8. Establish green purchasing guidelines to provide needed information to campus buyers.

Plans The Offices of Sustainability and of Procurement Services have initiated a process to develop green purchasing policy and guidelines. A student Green Purchasing Associate – funded through The Green Initiative Fund last year – has compiled information and will make recommendations on green purchasing policy and guidelines. One new initiative will be to compile more accurate and comprehensive measures of green purchasing and to begin tracking these purchases as a percentage of total campus expenses.

2008-2009 Highlights

Cal Green Environment Team (CalGET) The mission of [CalGET](#), the Sustainability Team for Physical Plant-Campus Services (PPCS), is to create, educate, advocate, and acknowledge the greening activities of PPCS. Since the beginning of 2007, Custodial Services has been implementing its Green Cleaning Program by using [ALPHA-HP](#) all purpose Green Clean product. Not only is this a cost savings, but the buildings are a healthier, cleaner, and safer environment for the students, faculty and staff. Currently, a quarter of campus buildings are being cleaned with green cleaning supplies. PPCS is also continuing to expand the use of HEPA vacuums, microfiber dust mops, and a green hand soap. Beginning in May 2009, all of the Campus restrooms will be supplied with 100% recycled, chlorine free and no bleach hand towel/bathroom tissue.

UC Printing Services [UC Printing Services](#) offers Forest Stewardship Council-certified paper, having received their [Chain of Custody](#) certification in May 2008. All of their digital printing jobs are run on recycled paper, and recycled alternatives are recommended for offset printing. All paper trimmings leftover from the binding process are recycled and vacuum processed into bales for recycling. They are committed to reducing their use of paper wherever possible, particularly through the use of technology to streamline the proofing process and exchange of information.

Transportation

Current Conditions Since 1990, the campus has reduced the amount of gasoline and diesel used in fleet vehicles and during faculty, staff, and student commutes by at least 20%. This has been achieved through reducing single-driver commuting to campus, as well as through fleet improvements. Two years ago, the Office of Fleet Services began a more rigorous review of department vehicle purchases. Not only has the percentage of green vehicles in the fleet nearly tripled since that policy change, but the number of miles driven by fleet vehicles has also dropped by almost 16%. Air miles traveled on University business have continued to increase, although at a slower pace (only up 0.4% since last year).

Figure 6: Transportation at UC Berkeley, 1990-2008

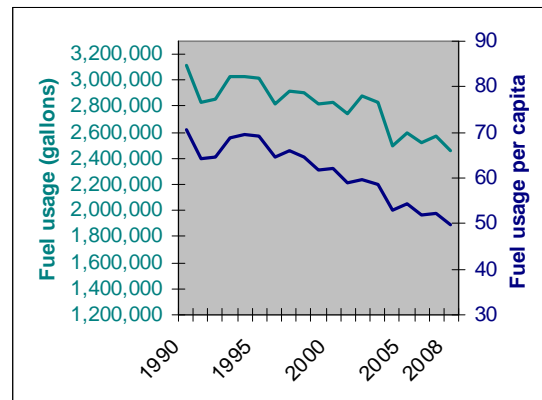
	1990	1995	2000	2006	2007	2008
Transportation						
Fuel usage – commute and fleet (gallons)	3,119,155	3,009,851	2,830,375	2,522,949	2,571,443	2,459,121
Vehicle miles traveled – commute	59,216,106	58,170,774	54,990,752	51,525,871	52,807,839	50,661,749
Vehicle miles traveled – fleet				2,457,893	2,284,422	2,075,851
Drive alone rate, faculty/staff (%) ^a	60.0%	54.6%	50.2%	47.1%	47.1%	47.1%
Drive alone rate, students (%) ^a	10.7%	11.8%	8.2%	8.0%	8.0%	7.1%
Green fleet (%) ^b				3.7%	5.7%	10.9%
Air travel (miles) ^c				113,495,456	116,394,265	116,892,152

^a Drive-alone rates are determined through campus surveys conducted every three years.

^b "Green" fleet designation includes categories of vehicles as defined in the Energy Policy Act (various) plus hybrid vehicles. Source: Fleet Services.

^c Business air travel miles were inadvertently miscalculated for the 2008 *Campus Sustainability Assessment* due to the exclusion of some trips. Calculations of air travel greenhouse gas emissions were not affected by this omission.

**Fuel Usage Dropped in 2008 by 4.4%...
and usage per capita has dropped
by 30% since 1990.**



Achievements

Bike parking increasing by 500

Contractors have installed nearly 500 new bicycle parking spaces at 18 locations throughout the UC Berkeley central campus and at nearby UC buildings. Over the past year the campus has seen a significant increase in ridership (student bicycle commuting is up by 3% from previous years), and bike racks have been near or over capacity on most days, prompting calls for new racks from across campus. The Campus Bicycle Committee, the Parking & Transportation department and students have been instrumental in bringing this new bike parking on line. As envisioned by the [Campus Bicycle Plan](#), adding these new racks should ease demand and encourage more commuting to the campus by bicycle.

Transportation

Transportation survey shows an increase in walking and biking to campus

The campus is required to conduct a transportation survey of both students and faculty/staff every three years and report it publically. The [2008 student transportation survey](#) shows a decline (relative to the last survey in 2005) in the number of students that commute by driving alone or in carpools and a corresponding increase walking and biking. It is likely that a range of factors are behind this continuing trend away from driving. This survey was sponsored by multiple campus entities, including [Capital Projects-Physical and Environmental Planning](#) and [Parking & Transportation Services](#). It was administered to a representative sample of 7,062 undergraduate and graduate students, or approximately 20% of registered students in fall 2008. The overall response rate was 38%.



Transportation Goal

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

Key Strategies:

1. 25% of all fleet vehicles to be green by 2014. (CalCAP pending)
2. Reduce demand for parking through incentives for alternate travel modes. (LRDP)
3. Locate all new University housing within a mile or within 20 minutes of campus by transit. (LRDP)
4. Implement a program of strategic investment in campus pedestrian and bicycle routes. (LRDP)
5. Continue strategic bicycle access planning. (LRDP EIR)
6. Develop a strategic pedestrian improvement plan. (LRDP EIR)
7. Investigate initiatives to reduce greenhouse gas emissions from business air travel.

Transportation

Plans The Department of Parking and Transportation and the Office of Fleet Services have committed to reducing campus fuel usage. In conjunction with the Office of Sustainability and others, they will be developing plans to achieve these reductions, which may include expanding the use of car share services to replace little-used fleet vehicles. To try to address the increasing air travel emissions, the Office of Sustainability will market videoconferencing and other electronic meeting options to faculty and staff. The next faculty and staff transportation survey will be completed in Fall 2009.

2008-2009 Highlights

Grant Winners

2009 TGIF Grants One of the ten proposals funded this year by The Green Initiative Fund will help reduce the environmental impacts of transportation: “BicyCal” will expand the current bike-share program and create a bike station on campus.

Climate Action Fund UC Berkeley faculty, students, staff, and alumni are actively solving some of the planet's most pressing challenges. However, much of this work involves traveling around the world — and contributing to greenhouse gas emissions and climate change. UC Berkeley's Air Travel Calculator helps members of the campus community estimate the greenhouse gas emissions related to their air travel and make up for this impact through a charitable donation to the UC Berkeley [Climate Action Fund](#). Contributions to date have helped fund [energy and water conservation posters](#) and the [Green Department program](#).

New Directions Program for Alternative Transportation UC Berkeley offers a comprehensive package of alternative programs to encourage the use of alternative transportation to reduce traffic and parking demand, with the goal of reducing traffic and parking demands and helping to lessen the impact on the environment. The [New Directions](#) program offers a suite of attractive alternative commute benefits to UC Berkeley faculty, staff, and students. The program offers universal bus pass programs, transit subsidies, parking discounts for commuters who use alternative transportation, pre-tax purchases through payroll deduction, and a host of other benefits and incentives.

Current Conditions The University of California system has recently adopted a new policy on sustainable foodservices practices, and sustainable food and dining operations has been a very visible issue on campus this past year. Using the Real Food Challenge criteria, Cal Dining estimates that sustainable food purchases for the 08-09 academic year were at least 24% of all food and beverages bought and is in the process of having a third party verify these purchases.

Achievements

New policy on sustainable food completed

The UC Sustainable Foodservices Working Group was formed in July 2008 and recently finalized a system-wide policy on foodservices at the campuses across the University of California. Representatives from UC campuses were either appointed or volunteered to serve on this working group. The working group aimed to create a framework for each campus to develop measurable site-specific targets for sustainable food offerings, sustainable dining facility operations and maintenance, and education and outreach activities. Under this arrangement, campuses will report their progress annually and update goals as needed. Once formally adopted the policy, it will become part of the UCOP [“Policy on Sustainable Practices.”](#)

New Garden to raise awareness

In March 2009, a group of students and the ASUC Sustainability Team broke ground on a food garden – a victory garden - just west of Evans Hall near Memorial Glade. Conceived as a way to raise awareness of food issues on campus, the garden has been outfitted with colorful signs, creative fencing, and educational materials, and has begun yielding produce. Drawing support from students studying various disciplines and from Facilities Services, the garden made its official debut in April 2009.



Overview Report on Sustainable Food Systems at UC Berkeley

Even before the creation of a new sustainable food committee to explore green food issues on campus, a student project yielded a solid starting point: a document entitled “Sustainable Food Systems at UC Berkeley” (Karen Salvini, December 2008). The report provides an overview of action already being taken on campus and includes a survey on food preferences at the Haas School of

Business. More than half of the responding students said that at least a portion of their food purchases were local or organic.

Food & Dining Goal

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

Key Strategies:

1. By December 2009, complete a report that sets sustainable foodservice practices goals, addresses plans to achieve these goals, and shows the feasibility of including self-operated or contract operations; provide a yearly progress report on these goals starting July 2010. (UCOP pending)
2. Provide student patrons access to educational materials that will help support their food choices. (UCOP pending)
3. Engage in activities with the surrounding community that support common goals regarding sustainability. (UCOP pending)
4. Encourage the use of third-party “green business” certifications for sustainable dining operations. (UCOP pending)
5. Expand membership of UC Berkeley’s Sustainable Food Subcommittee and establish regular meetings to set goals and review progress.

Plans The new UCOP foodservices operations policy requires that each campus set goals and submit an action plan by December 2009. A UC Berkeley subcommittee has already met twice and will reconvene in the fall to study the issue further and adopt new sustainability policies for dining and foodservice operations. Due to the variety of foodservice operators on campus, the process of including all campus foodservice operators and achieving overall compliance with the new UCOP policy will be challenging.

2008-2009 Highlights

Grant Winner

Berkeley Student Food Cooperative The new Berkeley Student Food Cooperative (BSFC) received a 2009 TGIF Grant to create a natural and sustainable food cooperative on campus. The BSFC will be a member-worker owned fresh grocer, café, and deli. Its innovative business structure is aimed at addressing current economic and health concerns, as well as global climate change and local student community involvement and leadership. The team already developed a budget and menu and is working to secure space either on or adjacent to campus in order to open in fall 2009.

Green Events [Green Events Certification](#) is a new program to identify and recognize campus events whose organizers have taken extra steps to lower their environmental footprint. The program, an initiative of the Office of Sustainability and the Berkeley Events Network, identifies a set of conditions and actions that event organizers can choose to meet. Events can range from a departmental brown bag to black-tie galas, so greening options vary depending on the scope and location of the event and often include food service. Thus, the number of criteria required for Green Event certification varies both by category and by size of event. Since the program launched in April, eight events have been certified, including the Sustainability Summit (medium) and CalFest-Staff Appreciation Day (large).

Current Conditions The [2020 Long Range Development Plan](#) (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.

In June 2009, Physical and Environmental Planning finalized amendments to the UC Berkeley *2020 Long Range Development Plan*, Sustainable Campus chapter, to codify existing commitments to reduce campus contributions to climate change and revised campus design goals. The minor amendments are also supported by an Addendum to the environmental impact report that analyzed effects of the campus long range development plan.

Achievements

Lower Sproul Plaza Sustainability Design Workshop sparks new ideas

Held in November 2008 and funded by a 2008 TGIF grant, the Lower Sproul Plaza Sustainability Design workshop was an all-day meeting to gather input from stakeholders about the desired sustainable elements to be included in the remodel of this student-focused area of campus. Through presentations and small group planning sessions, the meeting solicited input on a broad range of topics and generated ideas for planning principles such as adaptive re-use, transparency, flexible spaces, and visible and educational systems for treating stormwater and conserving energy.

2009 Sustainability Summit attendees clean up Strawberry Creek

After the 2009 CACS Sustainability Summit, the Office of Environment, Health & Safety (EH&S) held a Strawberry Creek Clean-Up, where more than 200 participants experienced first-hand how sustainability in the community begins with individual action. Removing invasive species is a key strategy for riparian habitat restoration as identified in the [Strawberry Creek Management Plan](#).

Tim Pine, Environmental Protection Specialist in EH&S, has organized at least a dozen other volunteer events to restore the natural habitat of the creek area.



Native plant nursery established

A team recently broke ground on a native plant nursery and garden between Giannini Hall and Wellman Court to support the restoration of Strawberry Creek. Funded by a 2008 TGIF grant, the project recognizes the importance of maintaining biodiversity on campus, and promotes native plants – which require fewer external resources (e.g., water) to thrive than do commonly planted vegetation – and pollinators, whose numbers are in decline. A native garden and nursery creates a home base for repopulating the Strawberry Creek watershed with its original vegetation, and establishes a site to educate students, faculty, and staff about native species.

Land Use Goal

Plan every new project to serve as a model of resource conservation and environmental stewardship (LRDP)

Key Strategies:

1. Implement an ongoing program of investment to restore and renew the campus park landscape; implement a program of strategic investment in new and enhanced campus open park spaces. (LRDP)
2. Continue to manage runoff into storm drain systems such that the aggregate effect of projects implementing the 2020 LRDP is no net increase in runoff over existing conditions. (LRDP EIR)
3. Continue to revise and implement the Strawberry Creek Management Plan (SCMP) to include recommendations for habitat restoration and enhancement along specific segments of the creek. (LRDP EIR)
4. Continue implementing an urban runoff management program as published in the Strawberry Creek Management Plan. (LRDP EIR)
5. Manage the natural preserves based on ecological principles, including replacing invasive exotic plants with native plants suited to this biotic zone, replacing unhealthy plants and plants at the ends of their natural lives, and preserving and enhancing the habitat value of the zone. (LRDP)

Plans Environment, Health & Safety staff will develop maps that will allow numeric and other comparisons of impervious surfaces over time. With a requirement of not adding more stormwater runoff into Strawberry Creek, the campus has set a strategy of preventing net increases in impervious surfaces from campus renovations and building projects, along with other best practices outlined in the LRDP EIR. If more impervious surfaces (e.g., concrete) are created in one area, they will generally be mitigated elsewhere on campus by the addition of pervious surfaces (e.g., open paving blocks or gravel). Improved mapping capabilities will allow better tracking of successful implementation of this strategy.

2008-2009 Highlights

Award Winner

Theron Klos Theron Klos, a 2009 Sustainability Award winner, is the Grounds Operation Manager and has implemented a successful sheet mulching program as a sustainable method for weed suppression on campus. He also volunteers on weekends to introduce this practice to various community groups. He has been instrumental in making the Strawberry Creek Restoration Project a success by helping with volunteer events and providing gloves, tools, and green waste bins – often responding to last-minute requests. Theron has also been very responsive to conservation efforts to reduce the use of water and fuel use in his operations.

Grant Winners

2009 Grants One of the ten proposals funded this year by The Green Initiative Fund will address land use impacts. “Lawns to Meadows” (Facility Services, Capital Projects) will prepare a master plan to convert selected grass lawns to regionally appropriate plants. In addition, a 2009 CACS Green Fund Grant was awarded to “Strawberry Fields Forever” (or conversion of a lawn to an educational native plant landscape) Grounds Service, PP-CS. The converted site will not only yield a colorful native landscape, but demonstrate that UC Berkeley is increasing the sustainability of its landscapes.

Current Conditions UC Berkeley offers a wide range of [undergraduate](#) and [graduate](#) degree programs and [courses](#) with an environmental focus or the opportunity for environmental specialization, including the Engineering and Business for Sustainability Certificate. The campus also supports a large number of research centers related to the environment and sustainability. Our core mission – of teaching, research, and public service – provides an opportunity to use campus as a research and learning laboratory for sustainability. It is not surprising that the Environment – “the impacts of human activity on our planet’s ecosystems, and how to manage and mitigate those impacts” – was one of ten academic themes of exceptional promise included in the [2002 UC Berkeley Strategic Academic Plan](#).

At the same time, students often organize clubs or projects around these same themes. There are at least 25 student-run environmental organizations, including the student government ASUC Sustainability Team and the Building Sustainability at Cal program. Service learning opportunities are also large. The [DeCal Program](#), a student run democratic education program, offers courses like The Joy of Garbage, Education for Sustainability Living, Energy, Sustainability, and Global Warming. Additional student-led courses for the coming year include one on CalCAP and one on campus water sustainability.

2008-2009 Highlights

Award Winner

Kameron Kitajima Kameron Kitajima, winner of a 2009 Sustainability Award, has been a role model of the student sustainability effort. He started out as a Residential Sustainability Education Coordinator his first year and has expanded his influence ever since. He played a pivotal role in the success of the Green Campus Program, was a facilitator for the ERG 98/198 DeCal class, and participated in the Building Sustainability at Cal project. Kameron has contributed to the mission of the university by integrating sustainability efforts in education, in operations, and in public service.

Grant Winners

Talking Louder About Sustainability The Office of Sustainability received a 2009 grant from The Green Initiative Fund to conduct a one-year comprehensive marketing and outreach campaign that will reach the general campus population and target specific student, faculty, and staff populations to encourage program participation and behavior changes while expanding the culture of sustainability at UC Berkeley.

UC Berkeley Extension Founded in 1891, UC Berkeley Extension (UNEX) is the continuing education arm of the UC Berkeley. All Extension courses offered for academic credit are reviewed and approved by UC Berkeley. [UNEX](#) has an extensive range of sustainability-related courses and programs, including sustainable design, energy for sustainability, and environmental monitoring.

Academics & Learning by Doing



Metrics of Sustainability (MBA 292T) This course exposed students to the complex field of corporate and product specific sustainability measures. It explored metrics in all three legs of the sustainability stool (financial, environmental, and social). It also showed how important it is to dig deep into a company's own operations and value chain to truly understand how sustainable its operations and products are.

Green Departments The [Green Department Certification](#) is a new program to identify and recognize departments that have taken extra steps to have greener operations and lower their environmental footprint. The program identifies a set of conditions and actions that departments can take to be certified as a Green Department. The Office of Environment, Health & Safety and the Residential and Student Services Program (RSSP) are UC Berkeley's first official Green Departments, with several more departments expected to achieve certification in the fall of 2009. The program is an initiative of the Office of Sustainability and the Green Campus program.

Awards and Honors

UC Berkeley continues to be a leader in campus sustainability and has been recognized by many organizations. The campus (as a whole and for distinct initiatives) has received awards as a member of the UC System as well as individual awards.

UC System Awards and Honors

- 7th Greenest College in America (UC System) – *the daily green*
- “Shining Star” (UC System), *Sierra Magazine* (2008)
- “Fifty schools that will help your kids help the planet,” *Kiwi Magazine* (2008)
- 4th Greenest Institution of Higher Learning (UC System), *Sierra Magazine* (2007)

UC Berkeley Awards and Honors

- Sustainable Endowments Institute, *Campus Sustainability Leader*, The College Sustainability Report Card, 2008
- National Wildlife Federation, *Campus Environment 2008: A National Report Card on Sustainability in Higher Education, Exemplary Programs in On-Campus Clean Energy Sources & Cogeneration, Plans to Do More with Recycling, Solid Waste, & Materials, and Plans to Do More with Green Landscaping & Grounds.*
- 2008 Environmental Achievement Award – United States Environmental Protection Agency, Region 9
- Princeton Review, 2010 Green Rating – 99; Green Rating Honor Roll
- Princeton Review, 200 Green Rating – 95
- Campus Sustainability Leadership Award, Honorable Mention 2007, American Association for Sustainability in Higher Education
- “Fifty schools that will help your kids help the planet,” *Kiwi Magazine* (2007)
- “Greenest Colleges and Universities in the World (Honorable Mention),” *Grist* (2007)
- 4th Annual Flex Your Power Award – Best Overall (2006)
- 2009 Best Practice Awards (Monitoring-Based Commissioning for Tang Health Center), University of California
- 2008 Best Practice Awards (2 – HVAC Design and Lighting Design/Retrofit), University of California
- 2007 Best Practice Awards (Materials Reuse for LeConte Renovation; Honorable Mention, Best Sustainable Design for University Village Housing), University of California
- 2006 Best Practice Award (Integrated Design Process), University of California
- 2008 Student Energy Efficiency Award, University of California
- 2008 Student Sustainability Program Award, University of California
- 2007 Student Sustainability Program Award, University of California
- 2006 Student Sustainability Program Award, University of California
- 2004 Certificate of Merit for Outstanding Achievement (water pollution prevention efforts), California Water Environment Association
- 2002, Industrial Pollution Prevention Award, East Bay Municipal Utility District
- 1996 Integrated Pest Management Innovator Award, California Environmental Protection Agency's Department of Pesticide Regulation

Statement of Commitment

UNIVERSITY OF CALIFORNIA, BERKELEY Statement of our Commitment to the Environment

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