UC Berkeley

# 2009 Campus Sustainability Plan

*"By compiling our sustainability goals and strategies and addressing a broad range of environmental aspects, UC Berkeley is planning for the future and setting the bar higher."*

– **Chancellor Birgeneau**

**University of California, Berkeley**

**July 2009 (Updated February 2013)**

Visit http://sustainability.berkeley.edu for more information

*This page intentionally left blank*

# Letter from Chancellor

Just as UC Berkeley is committed to a breadth and depth of academic research, teaching, and expertise, we are also committed to a comprehensive approach to "work toward becoming a more sustainable campus and institutionalize campus sustainability."[1] The goals highlighted in this *2009 Campus Sustainability Plan*, especially the new ones related to campus fuel usage and food services, add to the collective statement of how UC Berkeley seeks continuous improvement and sustainability success.

Two years ago, I announced the campus' greenhouse gas emissions reduction target of achieving 1990 levels by 2014. By compiling our sustainability goals and strategies and addressing a broad range of environmental aspects, UC Berkeley is planning for the future and setting the bar higher. The 2009 Campus Sustainability Plan defines a vision of long term sustainability and describes steps being taken to achieve the vision, with focus on individual and concrete action. It aims to take advantage of the opportunities to use the campus as a research and learning laboratory for sustainability.

Taking a comprehensive approach can help create a culture of sustainability on campus, which can be as important as the reductions in environmental impacts. Change will require leadership and champions at all levels of the University, since a large number of tools are needed to achieve these goals. Streamlining campus protocols and empowering the campus community around sustainability can increase efficiency, reduce waste, and better serve the educational mission of UC Berkeley.

In the coming years, the campus will have many new opportunities to reduce our environmental impacts and improve our operations. As we move forward to create a more sustainable campus, I encourage each of you to ask questions and to take action: use less energy and water, recycle more, purchase greener, keep learning, and explore new opportunities.

**Chancellor Robert J. Birgeneau**

[1] "Access and Excellence," Chancellor Robert J. Birgeneau, Fall 2008 http://newscenter.berkeley.edu/news/chancellor/access/access.shtml.

# Campus Sustainability Plan

## In Brief

The announcement of the Cal Climate Action Partnership (CalCAP) greenhouse gas emissions target in April 2007 set a high bar for campus sustainability activities. Backed by an extensive Feasibility Study and driven by a student petition, the CalCAP goal represented an ambitious vision for campus reductions of greenhouse emissions through 2014. Implementation to date has shown the campus committed and able to undertake new goals and challenges in this arena.

The University of California, Berkeley, adopts this *2009 Campus Sustainability Plan* [Plan] to define a vision of long term sustainability and describe steps being taken to achieve the vision. The Plan describes the broad campus commitment to sustainability in nine core areas[2] and addresses the increased interest in and concern about the impacts of campus activities beyond those related to climate change. The Plan will guide future work on campus and establish a structure to identify and achieve continuous improvement.

Concrete and measurable goals are necessary for ensuring real progress toward sustainability. At the same time, implementation of these goals will require connecting this larger vision of sustainability to daily actions, in ways that ensure a better final result or outcome. UC Berkeley can develop a new paradigm for implementing sustainability on campus – simultaneously reducing the resource footprint of the campus and improving its economic bottom line.

Successfully achieving campus sustainability goals will result in rethinking business as usual. A new approach to campus activities should embrace basic values of maximizing efficiency, eliminating waste, and generating positive returns – either as direct cost savings or other intangible benefits like more comfortable classrooms or time-saving technology. "Going green" should entail minimizing the amount of electricity or water used without decreasing the quality or quantity of education, research, or administrative operations. Better yet, sustainability should actually ensure an improved outcome. Work can be done better by streamlining processes, empowering the work force, and avoiding 'work arounds' (fixing problems without fixing the process that produced it).

Text in red has been updated as of February 2013.

## Guiding Principles

UC Berkeley intends to continue its leadership on environmental stewardship and to promote action and awareness through educational and research activities. This commitment – formalized in the 2007 **"**Statement of Our Commitment to the Environment" – 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;

[2] Energy & Climate, Water, Built Environment, Waste, Purchasing, Transportation, Food & Dining, Land Use, and Academics & Learning by Doing.

- 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.

**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 a both a broad definition of sustainability and a commitment to transparent reporting. While the annual campus sustainability reports (e.g., the *2009 Campus Sustainability Report*) concentrate on transparency for traditional environmental indicators – like 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 system[3]," the report includes data on undergraduate affordability and access, student experience and profiles, as well as research, budget, and finance.

### *Social and Economic Sustainability*

The *University of California 2009 Accountability Report* measures progress in meeting teaching, research, and public service goals. Indicators in fifteen different areas are presented for the entire UC system, for each campus, and sometimes for other comparable institutions.

In addition to including four environmental sustainability indicators, the report includes data on multiple measures related to social and environmental sustainability:

- → graduation and retention rates
- → cost of attendance and financial aid
- → enrollment and graduation rates by race, ethnicity, and gender
- → faculty and staff by race, ethnicity, and gender
- → total research expenditures
- → revenues and expenditures, total and by student
- → endowment funds, total and by student
- → continuing education programs

[3] *University of California Annual Accountability Report*, May 2009, http://www.universityofcalifornia.edu/accountability/about.html

## Scope of the Plan

This Plan compiles previously adopted goals and strategies into a comprehensive document to enhance accountability and transparency and to capture the culture of sustainability on campus. Where adopted by campus stakeholders, new and additional goals and strategies were included, most notably with the goal related to fuel usage by fleet vehicles and campus commutes. The Plan covers a broad overview of nine different areas of environmental sustainability, and refers to existing planning documents for more detail. In cases where strategies help achieve more than one goal (e.g., Purchasing and Waste for reduction of product packaging or Transportation and Energy for reducing the impacts of business air travel), they are only included in one section.

Four documents and programs guide sustainability planning at UC Berkeley and are the sources for most of the goals and key strategies listed later in the document.

- 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 UC system will minimize environmental impacts.
- The *Strawberry Creek Management Plan* (SCMP) continues to improve water quality in Strawberry Creek and allows locally native fish populations to flourish.

There are additional planning documents that articulate the longer term vision for campus and/or that guide planning and management in specific areas.

- The *2002 UC Berkeley Strategic Academic Plan* presents provisions to ensure that capital investment strategy should align with and promote the academic goals of the campus.
- The *New Century Plan* presents policies, guidelines, and initiatives to create a physical design and planning framework for the campus.
- The *Landscape Master Plan* sets a framework of preservation, renewal, and management for the campus landscape, based on campus-wide objectives to develop the campus landscape in support of the educational mission of UC Berkeley.
- The *Landscape Heritage Plan* provides a framework and guidance to balance the preservation of UC Berkeley's Classical Core in the heart of the Berkeley campus, with the need to accommodate improvements for a thriving educational institution.
- The *Campus Bicycle Plan* is designed to improve bicycle access for students, faculty, staff, and visitors.

## Metrics

Rethinking business as usual may also involve ensuring that key performance indicators reflect the desired outcome – acknowledging that "you get what you measure." It requires continually asking "why is it done that way?" to ensure continuous improvement. Measuring the right process or outcome is crucial to developing and maintaining more sustainable institutions. UC Berkeley has developed a set of Sustainability Metrics, which are reported annually[4]. With the adoption of this Campus Sustainability Plan, the Office of Sustainability commits to developing additional metrics as required, such as appropriate normalizing factors to better benchmark our progress and metrics related to the Purchasing and Food & Dining goals.

## Goals, Planning, and Reporting

The Office of Sustainability commits to annual reports on the campus progress toward meeting these goals and implementing these strategies. By 2011, the Office will conduct a review of the efficacy of this Campus Sustainability Plan and of the adequacy of the goals. Future reviews of the Campus Sustainability Plan will occur at least every three years.

## Sustainability Goals

| | |
|---|---|
| **Energy & Climate** | By 2014, reduce greenhouse gas emissions to 1990 levels. (CalCAP)<br>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) |

[4] The Sustainability Metrics were first reported in the *2008 Campus Sustainability Assessment*; the Metrics have been updated and expanded in the *2009 Campus Sustainability Report*. The Metrics will be updated annually in subsequent Reports.

## I. Energy & Climate

UC Berkeley has already set an ambitious greenhouse gas emissions reductions target and identified multiple strategies for achieving this target. Numerous staff have begun implementation of the identified projects. The CalCAP program is managed by the Office of Sustainability and overseen by the CalCAP Steering Committee.

**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.

## II. Water

Total campus water usage has dropped by more than 10% since 1990, even in the absence of a water conservation target. 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 renovations.

**Goal: Reduce potable water use to 10% below 2008 levels by 2020**

Key Strategies:

1. Double the water use reduction target if the local utility provides a non-potable source of water for irrigation.
2. Convene a steering committee composed of faculty, staff, and students to conduct a feasibility study and an analysis of possible projects and targets.
3. Identify and implement cost-effective water projects, especially those that also reduce campus energy use.
4. Include at least two Water Efficiency Credits as mandatory Leadership in Energy and Environmental Design (LEED™) credits for new construction projects.

## III. Built Environment

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.

**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.

## IV. Waste

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). While the campus met the 2008 target of a 50% diversion rate by June 2008, additional effort and new initiatives will be required to achieve future goals.

**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.

## V. Purchasing

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.

**Goal: Comply with the University of California environmentally-preferable purchasing policies and procedures. (UCOP)**

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.

## VI. Transportation

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%. The Department of Parking and Transportation and the Office of Fleet Services are committed to further reducing fuel usage.

**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.

## VII. Food & Dining

The University of California system has recently adopted a new policy on sustainable foodservices practices. UC Berkeley created a committee to study the issue further and will soon adopt new sustainability policies for dining and foodservice operations.

**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.

## VIII. Land Use

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.

**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)

## IX. Academics & Learning by Doing

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 @ 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.

## Acknowledgements

The Office of Sustainability would like to recognize all of those who contributed to this Plan, while acknowledging that any errors or omissions remain our responsibility. We especially want to thank the members of the Chancellor's Advisory Committee on Sustainability and the ad hoc Planning Subcommittee for their hard work, support, and enthusiasm. The Plan relied heavily on multiple campus stakeholders for input, support, and comments:

Raul Abesamis
Rebecca Anderson
Eric Anglim
Lisa Bauer
Nathan Brostrom
Judy Chess
Ron Coley
Eric Craypo
Ed Denton
Kelley Etherington
Mark Freiberg
Pat Goff
Amy Golladay
Greg Haet
Karl Hans
Chris Jones
Kameron Kitajima
Cathy Koshland
Shawn LaPean
Patrick Macardle
Sandy Macasieb
Cyril Manning
Lila Mauro
Steve Maranzana
Jennifer McDougall
Dan McGrath
Kelley McKanna, contributing author
Lisa McNeilly, primary author
Laura Moreno
Tim Pine
Eric Robinson
Karen Salvini
Kathleen Satz
Irene Seliverstov
Sara Shirazi
Kira Stoll
Rich Taylor
Seamus Wilmot
Joanna Young

Chancellor Birgeneau Photo Credit: John Blaustein