

A Sustainability Plan for Princeton



Princeton University adopted its Sustainability Plan in February 2008.

With its 380-acre main campus, more than 160 buildings, approximately 7,100 students, and 5,400 employees, the University has a significant environmental impact. That fact alone would justify developing a comprehensive strategy to minimize its environmental footprint. However, as a major research university with a distinguished faculty committed to studying and finding solutions to the global climate problem and environmental degradation, Princeton has a responsibility to shape the national sustainability agenda and to promote environmental leadership on its campus. Moreover, the University has an additional responsibility to prepare its students to do their part to protect the planet's natural resources for future generations.

As important as it is for Princeton to reduce its own impact on the environment, the most fundamental contribution that the University will make to the future well-being of the planet will come from the research of faculty and students that develops strategies and technologies to create environmental progress and alternative energy sources. The campus can serve as both a model for advanced sustainability practices and as a laboratory for students and faculty to test new ideas and approaches.

The University has a history of adhering to high environmental standards in its operations, in offices ranging from facilities and dining services to purchasing. Faculty are engaged in research into all aspects of climate change and energy use. Students have shown strong interest and commitment, reflected in a broad range of initiatives and activities.

The Sustainability Plan grew out of the efforts of the Princeton Sustainability Committee, which was established in 2002 by President Shirley M. Tilghman. Consisting of students, faculty, and staff, the committee realized that while individual environmental projects proved successful, exemplary campus stewardship and preparing Princeton's students to become engaged environmental citizens required a comprehensive plan.

In 2006, Shana Weber joined the staff as the University's first sustainability manager and established the Office of Sustainability. She began working with the committee to organize 10 working groups of students, faculty, and staff that assessed existing stewardship initiatives and potential opportunities across the institution. The three priority areas identified in the Sustainability Plan—greenhouse gas emissions reduction; resource conservation; and research, education, and civic engagement—emerged from that assessment.

This plan provides the framework for members of the University community, individually and collectively, to help Princeton play a leading role in the global effort to achieve a sustainable future for everyone.



Sustainability Manager Shana Weber (seated) recently co-led a course titled "Communicating Sustainability: Critical Reporting on Environmental Issues." Offered by the Princeton Environmental Institute, in partnership with the Office of Sustainability's Student Environmental Communication Network project, the class taught students the skills needed to produce short-format radio and video projects that cover environmental issues of concern to the students and the campus.



ABOVE: Architecture graduate students Jessica Reynolds (left) and Laila Seewang review plans for their winning entry in a campus sustainable garden design competition. Their plans, developed with Michael Wang, will become reality in summer 2008 when they are implemented on a 1.5-acre lot north of Forbes College. **BELOW:** Wang visits the site where the garden will be built. The trio followed contest criteria that set recycled materials, sustainability concepts, and community use as central themes.

GOALS

Princeton's Sustainability Plan sets ambitious goals in three areas:

1. greenhouse gas emissions reduction,
2. resource conservation,
3. research, education, and civic engagement.

Sustainability in a Period of Growth

Princeton is planning to add almost 2 million square feet of building space over the next 10 years. By adopting the Sustainability Plan, it is working to ensure that the campus will develop and grow in alignment with the plan's environmental goals and strategies. For example, the University's new 10-year Campus Plan proposes a reinvigorated commitment to



The Sustainability Plan is integrated with the new Campus Plan to ensure that development in the next decade adheres to the principles of sustainability. For example, half of the new dormitories being built for Butler College will have "green" roofs. University officials—in collaboration with students and researchers—will evaluate the difference in performance between the green and conventional roofs.

environmental stewardship. It incorporates the Sustainability Plan's landscape and stormwater strategies to restore, enhance, and expand the natural areas of campus, and sustainable building technologies to reduce energy demand and conserve water.

For more information about the Campus Plan, visit www.princeton.edu/campusplan.



The chemistry building now under construction serves as a model for the use of aggressive energy efficiency measures to meet sustainable building goals. For example, high-performance glazing in combination with sensors for control of dimmable lighting systems will allow optimal use of ambient daylight while high-efficiency laboratory fume hoods will minimize energy loss.

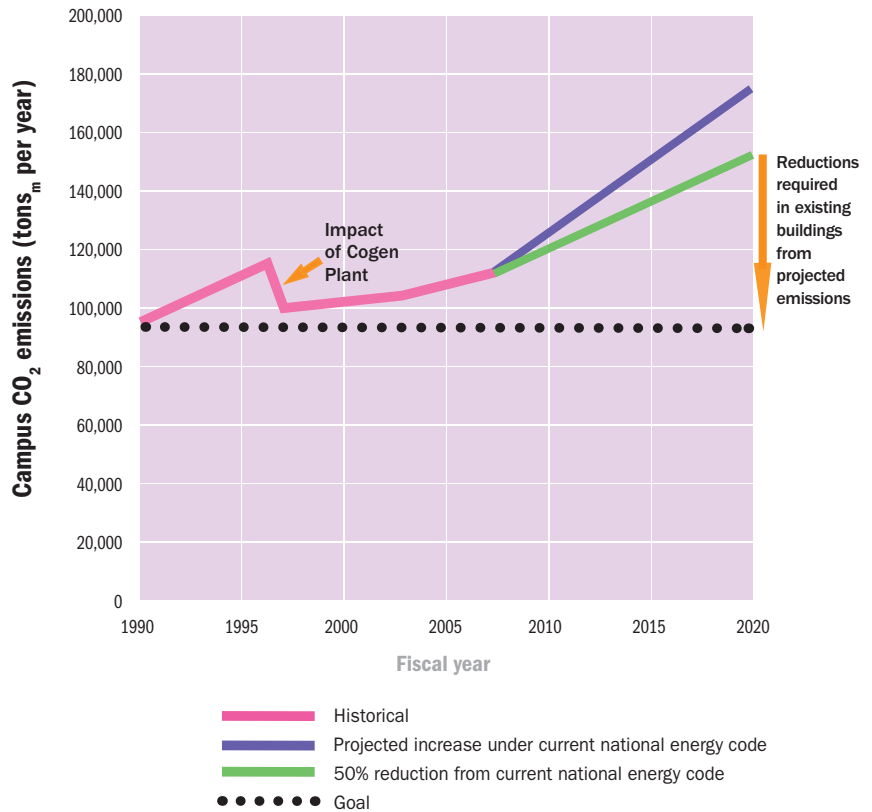
1. Greenhouse Gas Emissions Reduction Goals

- Decrease campus carbon dioxide emissions to 1990 levels by 2020.
- By 2020, decrease by 10 percent the number of cars commuting to campus on a daily basis, thereby reducing greenhouse gas emissions and parking demand.
- Reduce emissions related to the campus fleet.



The chilled water plant and its 2.6 million gallon storage tank enables the University to purchase electricity at a lower cost to operate chillers during non-peak evening hours and store the chilled water for use during the day for air conditioning campus buildings and cooling specialized laboratory equipment.

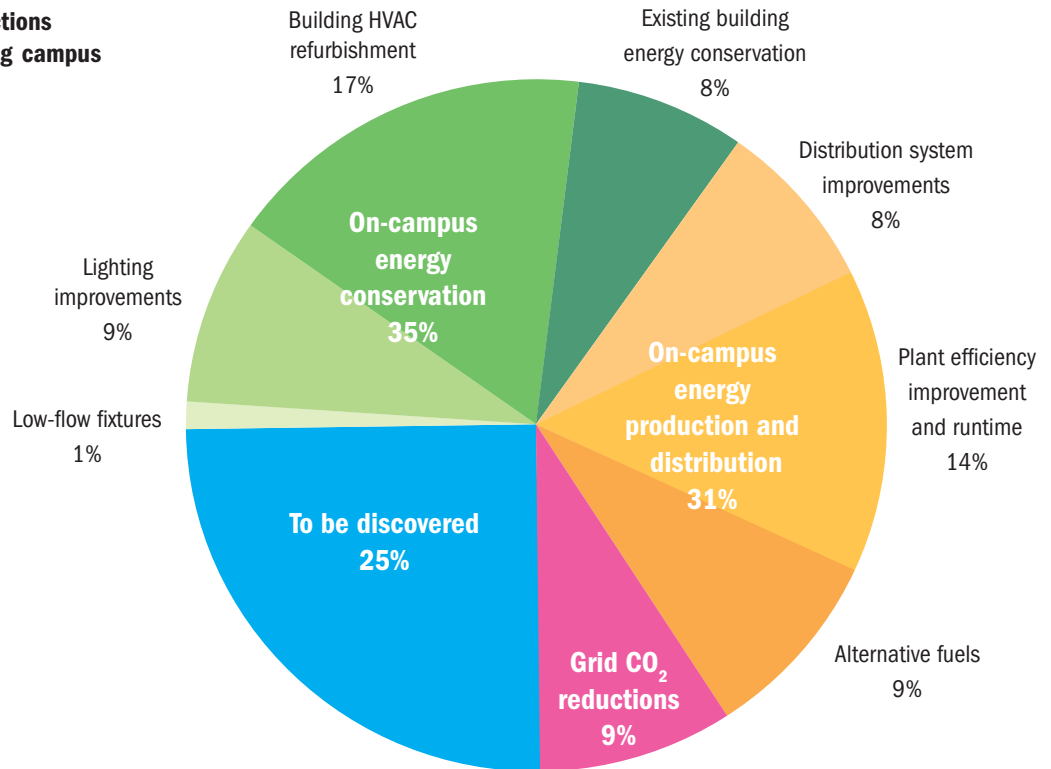
Greenhouse Gas Reduction
Goal: Decrease campus CO₂ emissions to 1990 levels by 2020



The challenge of significantly reducing CO₂ emissions while growing the University will be partially met by adopting building practices that meet an energy standard for new construction in the capital plan that is 50 percent stricter than those required by current building codes (see graph above). The balance of the CO₂ goal will be met by adopting the strategies summarized in the chart on the opposite page.

Greenhouse Gas Reduction

Strategies to meet reductions required from the existing campus



What Makes Princeton's Plan Different?

One of the key features of the Sustainability Plan is the greenhouse gas reduction target. Princeton has committed to reducing its carbon dioxide emissions to 1990 levels by 2020 (graph on opposite page) even as the campus grows. Achieving this goal will prevent 75,000 metric tons of carbon dioxide from entering the atmosphere in 2020 and in each subsequent year—yielding the highest direct environmental impact of any objective in the plan.

The University proposes to reach this goal through activities on campus rather than through off-campus mitigation projects such as “offsets.” The purchase of emissions offsets—investment in emissions-reduction activities such as planting trees in this country or abroad—is a feature frequently included in other sustainability plans. Purchasing offsets, in essence, gives the purchaser the right to continue emitting greenhouse gases; in theory, the money expended to purchase the offsets would pay the costs of reducing emissions elsewhere in the world.

Instead, Princeton will impose a voluntary “CO₂ tax” when conducting cost-benefit analyses to determine whether a given energy conservation measure should be included in a new building project. Adding this cost factor to its decision-making gives the University a way to recognize the impact of CO₂ emissions and could lead planners to adopt emission reduction designs and technologies that would not otherwise be considered.

Princeton believes that it has a responsibility to improve its ongoing operations. Because this goal depends on the emergence of new technologies, innovation with existing technologies, and behavioral change, the University cannot predict how it will fully achieve the target (chart above). However, by serving as a laboratory for the development of new technologies and practices, the University not only contributes to and exemplifies the range of behaviors needed to achieve a sustainable society, it also trains students to be good environmental citizens in the future.

2. Resource Conservation Goals

- Apply an integrated landscaping approach that helps to restore the quality and capacity of the regional watershed.
- Minimize the use of potable water for irrigation and increase the water retained for use on campus.
- By 2020, decrease personal water use by 25 percent below 2007 levels per student.
- Reduce infrastructure water use to the maximum extent possible.
- Increase the household recycling percentage from the 2007 rate of 38 percent of all recyclable materials to 50 percent by 2012.
- Recycle at least 95 percent of all eligible materials from demolition and construction waste.
- Convert to 100 percent Green Seal or equivalent cleaning products by 2009.
- Complete the transition to 100 percent recycled disposable paper products by 2009.
- Reduce the use of disposable paper products.
- Maximize the number of purchasing contracts for “green” goods and services.
- Significantly increase the percentage of sustainably produced food items from the current base of 20 percent.
- Enhance efforts to interest the campus community in sustainably produced food.



A new farmers market, open to students, faculty, staff, and local residents, was launched in fall 2007 at Firestone Plaza. Organized by students and several campus offices, the market is intended to educate the community about the benefits of local produce and the importance of sustainably produced food.

Restored woodland and biofiltration landscapes frame a pastoral setting around the new chemistry building (at right) along Washington Road. Jadwin Hall and Fine Tower are in the background.



3. Research, Education, and Civic Engagement Goals

- Broaden interdisciplinary participation among faculty and students in research, problem solving, artistic expression, and communications relating to sustainability.



Emily Weissinger '09 (left) and Yin Liang '11 measure a local home's energy efficiency with a blower door test. The students were enrolled in a class led by civil and environmental engineering professor Catherine Peters as part of a program called "Engineering Projects in Community Service" (EPICS). It brings together community service agencies and undergraduates to advance the goals of the agencies while providing students with hands-on experience. These students partnered with the Stony Brook-Millstone Watershed Association to test homes throughout the area and promote awareness of "green retrofitting" strategies.

- Facilitate and advance connections between faculty and graduate student research and undergraduate education related to sustainability.
- Increase student research opportunities that incorporate links between the campus environment and global sustainability issues.
- Expose all Princeton University students to principles of sustainability.
- Develop leaders in sustainability among students, staff, and faculty.
- Expand the discourse about sustainability on campus, in the local community, and across the nation.
- Instill in students an awareness of their responsibilities as global citizens.
- Increase public recognition of Princeton as a leader in sustainability.

For more information on the goals and the strategies to achieve them, read the entire Sustainability Plan at www.princeton.edu/pr/reports/sustain.



Fieldwork is a key component of many environmental studies courses at Princeton. *Aspire*, the University's \$1.75 billion five-year campaign, is seeking to raise funds to support such teaching and research.

Funding for Sustainability Efforts

The Princeton Sustainability Plan recognizes that while the University is committed to aggressively pursuing improvement in the sustainability of campus operations, Princeton's investments in research and education are arguably the most effective way to use its resources to solve the problem of global climate change. One of the highest priorities for *Aspire*, the University's \$1.75 billion five-year campaign, is to raise funds for teaching and research to address urgent environmental issues.

To launch the plan, a gift of term funds over four years already has been pledged by the High Meadows Foundation. The gift will fund initiatives that support goals set forth in the research, education, and civic engagement section of the plan, including courses that use the campus as an environmental laboratory, student research into the

life cycle of products for the purchasing department, and student initiatives such as implementation of an organic garden designed through a School of Architecture competition.

Faculty, students, and staff interested in applying for funds should contact Shana Weber in the Office of Sustainability.

For More Information

Read the Sustainability Plan:

www.princeton.edu/pr/reports/sustain

Go to the Office of Sustainability website:

www.princeton.edu/sustainability

Contact Shana Weber, sustainability manager:

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