NC STATE UNIVERSITY | 125 YEARS

ANNUAL SUSTAINABILITY REPORT

2011 - 2012

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INTRODUCTION

As NC State celebrates 125 years, sustainability will continue to play an important role in both the tradition and transformation of our university. Since the university's founding as an agriculture school, sustainability has been a tradition that continues to evolve and grow.

This Annual Sustainability Report tracks the university's 2011-2012 fiscal year advances in sustainability, including progress toward implementation of NC State's five-year Sustainability Strategic Plan developed in April 2011. In this report, you will find not only highlights and stories about sustainable initiatives on campus but also a measure of the programs' success. Each section contains tactics accomplished as well as important metrics, which will serve as baselines for evaluating future progress.

We are proud to say that 2011-2012 was a transformational year in our progress toward becoming a more sustainable university. The university completed its first two LEED-certified buildings, marking the beginning of a new, more sustainable way of creating our built environment. University Dining now uses more sustainable, local foods than ever before. Academic colleges are elevating sustainability efforts, and we celebrate a 7 percent reduction in university-wide greenhouse gas emissions from 2008 to 2010. These transformations and others highlighted in this report show the exciting culture shift toward sustainability on campus.

The vision for sustainability at NC State is for today's transformations to become tomorrow's traditions. Sustainability will simply become an increasingly important part of campus. Whether in class, at work, at play or just visiting, people on campus and in the community will see the university as a leader in sustainability. As you will discover in this report, NC State is building on 125 years of tradition and transformation, making advances that will sustain the university well beyond the next 125 years.

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ACADEMICS & RESEARCH

Renewable energy installed at NC State aquaculture facility

Dedicated in April 2012, NC State's Marine Aquaculture Research Center's (MARC) – located in Morehead City – demonstrated hybrid photovoltaic (solar)-wind system powers pumps, which heat and cool water for application to the state's growing aquaculture industry. The project was funded using a $253,501 Green Business Fund grant to the university's Center for Marine and Atmospheric Sciences (CMAST) through the N.C. Department of Commerce and an additional $37,000 from private donors. The hybrid system consists of a 90-foot, 10 kW wind turbine and a 10 kW solar array that uses 40 separate solar panels each generating approximately 240 watts. Computerized data logging systems record the amount of electricity generated from wind versus solar. Projected energy generation is 21,500 kWh of the 100,000 kWh annual demand, which will be used to offset nearly $2,300 per year in electricity costs at the Carteret County facility. The NC Solar Center will measure actual energy output.

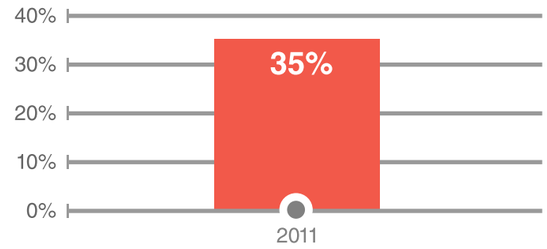
College of Agriculture and Life Science hires sustainability coordinator

Dr. Danesha Seth Carley, a 2006 doctoral graduate of NC State's departments of Crop Science and Plant Pathology, was recently named coordinator for sustainability programs in the College of Agriculture and Life Sciences. The first to hold this new position, she said her immediate goals are threefold: to facilitate public-private partnerships that focus on sustainability, to raise awareness of the college's efforts in sustainability and to serve as a clearinghouse of information on all of the college's sustainability-related activity.

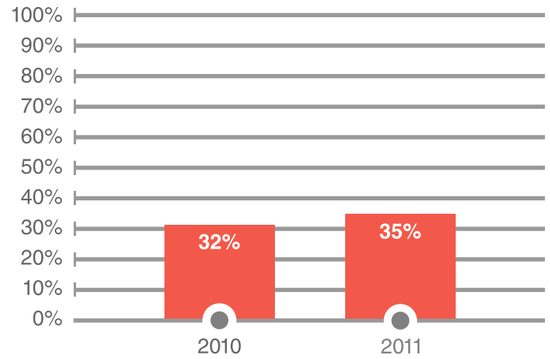
Agroecology Education Farm grows and partners with Green Planet Catering

There is a new Center for Environmental Farming Systems (CEFS)-supported educational farm at NC State. Led by Dr. Michelle Schroeder-Moreno, NC State's agroecology program director, the Agroecology Education Farm will help facilitate hands-on, inquiry-based learning in agroecology and sustainable agriculture for NC State students, faculty, staff and the surrounding community. In addition, the farm has established a partnership with Green Planet Catering to provide increased educational opportunities, culinary focused outreach and locally supplied produce.

Percent of students who have learned more about sustainability practices since enrolling at NC State



Percent of students who have learned more about energy conservation since enrolling at NC State



Poole College of Management focuses on sustainability

Since its naming in December 2010, the Poole College of Management has been actively working toward determining how best to integrate sustainability throughout the college's curriculum, research and outreach activities, reflecting benefactor Lonnie Poole's long-time advocacy for sustainability in business and industry. In summer 2011, a Poole College faculty member led the development of a comprehensive assessment of the level of sustainability-related research across disciplines at NC State and facilitated an open discussion with more than 50 NC State researchers, administrators and representatives of the Sustainability Consortium.

A six-member task force created by Poole College dean Ira Weiss then studied sustainability activities among business colleges and businesses. Their report included a detailed market analysis of sustainability trends and business drivers, emerging regulations and standards related to sustainability reports, benchmarking of other business schools' sustainability activities, and market demand for talent and student placement potential. The report contained four recommendations for the faculty to consider. Faculty continued the discussion in a series of meetings with industry leaders in sustainability and researchers from four NC State colleges conducting sustainability-related research.

Amory Lovins provides sustainable energy lectures at NC State

Author Amory Lovins presented two lectures at NC State in March 2012. In addition to leading the Rocky Mountain Institute, Lovins is internationally recognized for a long series of books and other writings on energy, sustainability and economics connected with green business. The lectures highlighted his latest book, *Reinventing Fire*, and were coordinated by NC State's Institute of Emerging Issues and the Environmental Sciences Academic Program. Key messages from the lectures include:

1. The U.S. can increase its economy nearly 160% by 2050 while switching to renewable energy;
2. An investment of about $4.5 trillion would save roughly $9 trillion in energy costs for a net gain of around $4.5 trillion;
3. A shift to domestic supplies of renewable energy promotes energy safety, security, sustainability and energy independence.

Both lectures were given in the student cinema and were attended by nearly 1,000 students, faculty and staff. Video of the lectures is available from the Institute of Emerging Issues.

Research paving the way for wireless charging of electric vehicles

The Advanced Transportation Energy Center at NC State, part of the Future Renewable Electric Energy Delivery and Management (FREEDM) systems center, recently published a study showing great improvements in inductive charging efficiency. Researchers have developed a new way to make wireless power transfer (WPT) receivers more efficient and functional, increasing the possibility of charging electric vehicles and other devices. Magnetic waves transmitted on a specific frequency from a transmitter to a receiver interact with a coil in the receiver to induce an electric current. If the coil is tuned so that its resonant frequency matches the frequency of the magnetic waves, the current is amplified. "The next step is to try incorporating this work into technology that can be used

to wirelessly charge electric vehicles," said Dr. Srdjan Lukic, an assistant professor of electrical and computer engineering at NC State.

Students transform highly visible campus space into Artist's Backyard

Proudly upholding a commitment to service-learning, students in the university's Department of Landscape Architecture Design+Build Studio transformed an otherwise anonymous stretch of mulch between two campus residence halls into a high-performance landscape rich with environmental and social components. This landscape, called the Artist's Backyard, uses a holistic approach to educate students, faculty, staff and visitors about the value of landscape architecture and the ability of green infrastructure to conserve resources. Serving as a pilot project for the university, the Artist's Backyard helped realize the goal of encouraging more socially and environmentally responsible landscapes across campus. At the same time, the project taught landscape architecture students about design, contracting and construction processes involved in real-world projects, giving them hands-on experience in an outside-the-classroom setting.

Artist's Backyard not only utilizes low-impact design building practices but also creates an intimate and beautiful outdoor space where students can study, relax or gather in small groups.

Survey shows students want NC State to be a sustainability leader

Energy Management and the University Sustainability Office conducted a second student survey, "Assessing Student Attitudes Toward Sustainability Issues." Survey results confirmed that the student population cares about sustainability topics and 78% of the student sample thinks it is important for NC State to be a leader in sustainability and the environment. When asked to rank environmental issues at NC State, energy consumption ranked highest – a change from the February 2010 survey where recycling was found to be the most important issue, followed by energy consumption.

Green catalysts earn NSF CAREER award

Catalysts are compounds that facilitate chemical reactions. Dr. Elon Ison, an assistant professor in the College of Physical and Mathematical Sciences, and his research group are working on developing greener catalytic reactions, which can help conserve chemical and natural resources while reducing waste and environmentally hazardous materials. This research has earned Ison and his team a five-year, $530,000 grant known as the "Early Career Development Award" from the National Science Foundation (NSF). Over the long term, this work could lead to the development of chemical methods that more efficiently utilize energy resources such as oil, coal, natural gas or biomass.

New College of Textiles course explores sustainable materials

In spring 2012, associate professor Dr. Melissa Pasquinelli offered an experimental course that she is developing on sustainability of soft materials. Open to undergraduate seniors and graduate students in science and engineering disciplines, the course covered technical aspects of the recyclability and biodegradability of plastics and other soft materials, as well as the use of soft materials for harvesting energy. She also developed a team project in her engineering thermodynamics course where students analyze a textile process and propose suggestions, supported by thermodynamics calculations, on improving its sustainability.

Textile researchers study more sustainable cotton dyeing

Research in the university's Textile Engineering, Chemistry and Science Department is helping textile manufacturers produce dyed cotton fabric with reduced adverse environmental effects. Cotton Incorporated has provided funding for studies involving cotton that has been chemically modified with cationic dye sites to more easily attract dyes. Unmodified cotton requires lengthy dyeing procedures that use large amounts of water and energy, as well as produce significant amounts of highly colored waste water that is difficult to treat. In contrast, cationized cotton can be successfully dyed with standard dyes using less water and energy in a shorter time and with little, if any, color in the waste water.

ACADEMICS & RESEARCH STRATEGIC GOALS	2011-2012 PROGRESS
Develop the scholarship, including the courses, curricula and research needed for students to become literate about energy, environment and sustainability.	
• Outline approaches for assessing sustainability skills that add value (defined by employability and admissions to post-graduate educational programs) to a student's program of study. Sustainability skills will likely differ by degree.	Participated in national conferences to learn more about views of sustainability content in academic programs, with perspectives from those both in industry and academic institutions.
Explore the concepts underlying sustainability in courses and curricula to build the case for sustainable practices.	
• Conduct a survey to assess student understanding and need for sustainability practices. The survey must have a robust statistical design, and be in a format produced and approved by survey experts.	The University Sustainability Office and Energy Management conducted a survey to determine student awareness and interest in sustainability and energy conservation.
Engage in discussions for advancing sustainability to optimize the use of energy, water, buildings, land, transportation and existing space through participation in the Campus Environmental Sustainability Team (CEST) working groups.	
• Recruit students and faculty members to participate in CEST working groups and other CEST activities with the University Sustainability Office.	Additional faculty members, graduate students and undergraduate students were recruited to participate in activities with both CEST and the Sustainability Office.

ACADEMICS & RESEARCH STRATEGIC GOALS	2011-2012 PROGRESS
Use the physical campus as a classroom and research facility to demonstrate and explore sustainability principles and practices.	
• Develop a framework for posting sustainability related research and internship activities within the university on a website. Ensure the website is accessible to faculty and staff members who seek student involvement. Ensure the website is accessible to students looking for esearch and internship opportunities within the university.	The beta version of Packlink is online and available, helping connect faculty and staff members with students interested in sustainability-related research and internships within the university. Students in several academic programs are engaged in such projects.
Promote research to advance sustainability, including the discovery of new technologies that advance sustainability, securing patents and employing new workers that align with a new energy economy.	
• Use websites for the Environmental Sciences academic program and the University Energy Council to list research opportunities for faculty members.	University Research Office staff forward all likely proposal opportunities to the Environmental Sciences and Energy Council staff who update the websites. The websites also post relevant news items and information about meetings, lectures and visitors to campus.
• Engage the Career Center and each college's career advisors in discussions about what is needed to prepare students for a green economy.	The Sustainability Office is working with the College of Agriculture and Life Sciences (CALS) Career Center to write a career guide to the green industry. The office is additionally working with the university's Career Development Center to ensure career counselors have the information needed to support students interested in green careers.

ACADEMICS & RESEARCH STRATEGIC GOALS	2011-2012 PROGRESS
Engage faculty researchers in sustainable practices to increase the resource use efficiency of research equipment and spaces needed to conduct state-of-the-art research.	
• The Energy Council will organize and sponsor annual open forums to create new approaches for faculty members to further sustainability.	The spring 2012 forum, "Smart Grid and Smarter Buildings: Development, Deployment and Demonstration at NC State University," accelerated the discussion for using these technologies at NC State.
Provide opportunities for service learning that bridge education, research and the practical application of sustainability.	
• Promote activities of the Wolfpack Environmental Student Association (WESA) and other student groups that engage in projects to advance sustainability within the campus and community.	WESA hosted several events such as the WESAcat race, a clothing swap and End of the World workshops, which included recyclable art crafts and how to tune a bicycle. WESA also continued work days at the SOUL garden, the first organic community garden on campus. Other student events can be found in the events section (page 47).
• Continue the partnership between Center for Student Leadership, Ethics and Public Service and the University Sustainability Office to offer the Alternative Service Break trip to Costa Rica to study sustainability.	Offered the second annual alternative service break trip to Costa Rica to study conservation and sustainable agriculture.
• Continue to provide sustainability-themed service projects as part of the Service Raleigh event.	200 people participated in the third annual Rubbage Ride, a litter pick-up on bicycles, which collected 543 pounds of litter (237 pounds of recycling, 37 pounds of compost and 270 pounds of trash).

COMMUNITY & CULTURE

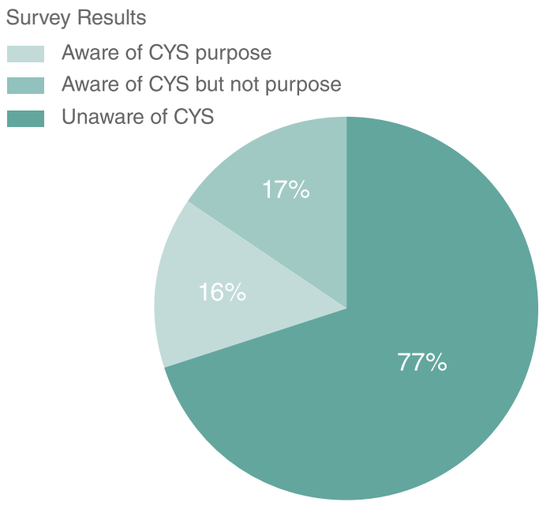
Interactive tools aid behavior change

As part of the "Change Your State" behavior change campaign, two interactive tools were launched in 2011-2012 – one on combined heat and power (CHP) and another that provides a 360-degree view of how specific types of rooms use energy. CHP explains how cogeneration powers Cates Utility Plant and benefits NC State's main campus. The 360-degree view of rooms provide examples of how students, staff and faculty can easily save energy in their residence hall, office, kitchen, classroom or laboratory. By navigating within a room, users can learn energy conservation tips, greenhouse gas emissions data and operating costs for more than 35 electronic appliances and devices commonly found on campus.

University reduces greenhouse gases 7% in two years

Many students, faculty and staff at NC State are minimizing the university's impact on the environment and greenhouse gas emissions (GHGs). In recognizing this contribution, the NC State chancellor signed the American College and University Presidents' Climate Commitment (ACUPCC). The inaugural GHG inventory was completed in 2008, and NC State's Climate Action Plan was developed in 2010, detailing the university's strategies to become climate neutral by 2050. The second GHG inventory was completed in 2010 and found overall GHG emissions reduced 7% from the baseline with electricity, refrigerants and air travel decreasing the most.

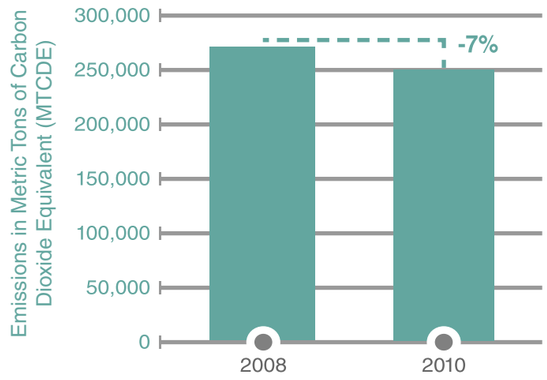
Student awareness of Change Your State (CYS) behavior change campaign 2011 - 2012



Fall festival celebrates sustainability

In the spirit of Halloween, Campus Sustainability Day 2011 featured an energy-themed fall festival that included a sustainability bike tour, games from various on-campus organizations, local pumpkin painting and a recycled costume contest. Leading up to the festival, students were encouraged to attend other sustainability events using the campus sustainability passport, which allowed attendees to receive stamps for attending featured events. Once students received four or more passport stamps, they were entered to win a backpack that uses solar energy to charge electronics.

Greenhouse gas emissions reduction



NC State measures sustainability with STARS

For the first time in 2012, NC State participated in a nationally recognized program to track and measure sustainability on campus. The Sustainability Tracking, Assessment and Rating System (STARS) is run through the Association for the Advancement of Sustainability in Higher Education (AASHE) and "is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance." STARS includes environmental, economic and social indicators, which are divided into four categories related to campus activities: education and research, operations, planning, administration and engagement, and innovation. The benefits of STARS include the ability to provide a framework for understanding sustainability, enable meaningful comparisons over time and facilitate information sharing to help build a stronger campus sustainability community.

Rubbage Ride increases in participation and collections

The third annual Rubbage Ride, in cooperation with Service Raleigh, grew to more than 200 participants, despite rain. Rubbage Ride, a litter pickup of campus and the surrounding community, gathered 543 pounds of litter (269.5 pounds of trash, 37 pounds of compostables and 236.5 pounds of recycling) from Hillsborough Street, Rocky Branch Creek and Lake Raleigh.

Wolfpack Athletics trains for a sustainable future

For years, NC State Athletics has led the way in turning the waste generated at its biggest events into valuable commodities through voluntary recycling. Over the past decade, Wolfpack football fans have used recycling bins around the football stadium and have recycled their glass, plastic and aluminum cans and bottles from their tailgate parties in blue bags distributed by WE Recycle volunteers.

In an effort to expand Athletics' sustainability efforts, a working group of representatives from Athletics facilities and marketing has partnered with the University Sustainability Office, Waste Reduction and Recycling, Energy Management, Transportation and the university's department of Parks, Recreation and Tourism Management to find ways to "green" athletics. The effort began with a women's basketball game on Feb. 21, 2011. During the game, volunteers maintained waste stations that collected recycling and compostable items. Students received T-shirts made of 100 percent recycled material and volunteers worked with waste crews to collect any remaining recyclable items. Baseball and men's basketball games have participated in green activities. The next green event is a men's football game in fall 2012 that will include greening of operations, as well as education and outreach. Over the last five years, Athletics has created more sustainable facilities, including replacing inefficient fluorescent bulbs, implementing water conservation strategies, closely monitoring fuel consumption and upgrading the efficiency of heating and cooling during facility improvements.

Earthwise Awards redesigned as the Green Brick

For the first time since 2004, the Earthwise Awards was redesigned to showcase the program's tie to NC State and its mission to recognize outstanding contributions to sustainability by NC State students, staff and faculty. Renamed the "Green Brick" in spring 2012, the program received double the amount of typical nominations and attained campus-wide exposure by partnering with the Engaged University Awards Ceremony. Alongside other university service award recipients, these three recipients were presented with their plaque and cash award: senior graphic design student Chelsea Amato, Anna Mangum, with the Industrial Extension Service Engineering and Technology Group, and mechanical engineering professor Dr. Stephen Terry.

COMMUNITY & CULTURE STRATEGIC GOALS

2011-2012 PROGRESS

Adopt, promote and adhere to a sustainability policy.

- Identify policy coordination team and develop a draft of the policy.
  - A team of students, faculty and staff was assembled and is working toward a draft policy by the September 2012 meeting of the Campus Environmental Sustainability Team (CEST).

Report sustainability information on a national scale toward becoming a national leader in sustainability.

- Report to Association for the Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking Assessment and Rating System (STARS) as the primary sustainability reporting mechanism.
  - Submitted STARS information in April 2012 and became a STARS Reporter.

Support opportunities to obtain funding for sustainability including grants, university campaigns, a student fee and seed money.

- Continue development of the student sustainability idea program, "Think Outside the Brick."
  - "Think Outside the Brick" continued in 2012 with rainwater collection for the community garden selected as the winning project. After further evaluation of cost and scope, the proposer pulled the project from consideration and the funds were reallocated to other campus priorities.
- Start conversation about a student sustainability fee with student groups.
  - Submitted draft fee proposal to the university's Budget Office by the June 1 deadline for continued conversation in summer/fall 2012.
- Pursue continued funding of the Energy Fellows Grant program.
  - Pursuing multiple avenues for funding, including grants and corporate sponsorships.
- Explore new ways to bring donations to the Sustainability Trust, which funds sustainability activities.
  - Sponsorships, fundraising, T-shirt sales and offsets from big campus events brought in $10,950.

COMMUNITY & CULTURE STRATEGIC GOALS

2011-2012 PROGRESS

Implement a comprehensive sustainability education and awareness program that utilizes peer-to-peer networks.

- Complete application of "Change Your State," a behavior change and awareness campaign, by distributing stickers and decals across campus.
  - Light switch sticker application is nearly complete with the final stickers going up in residence halls during fall 2012.
- Launch interactive components of "Change Your State" website.
  - Launched online tool with 360-degree interactive rooms that showcase energy saving opportunities in common university spaces (laboratories, classroom, kitchens, residence halls and offices). Additionally launched an online tool that illustrates the efficiency and operation of the combined heat and power installation at Cates Utility Plant.
- Develop plan for future iterations of "Change Your State."
  - In progress. Starting in fall 2012, "Change Your State" has a new project manager.
- Establish a method for delivering talking points to key leaders and keeping them updated.
  - Not complete.

Create a network among the local sustainability community that includes universities, governments, corporations and non-profits.

Participate in the Triangle J Council of Government's "Council for a Sustainable Triangle."

- The University Sustainability Office continues to participate in quarterly meetings.

Participate in monthly southeast sustainability coordinator conference calls and quarterly Triangle region sustainability meetings.

- The University Sustainability Office participated in every monthly call in 2011-2012. Triangle sustainability coordinators have stopped meeting on a regular schedule.

COMMUNITY & CULTURE STRATEGIC GOALS

2011-2012 PROGRESS

- Continue to act as a catalyst for regional collaboration such as Earth Day, Wake County Sustainability Task Force and Chapel Hill-Carrboro City Schools sustainability.

  → University Sustainability Office staff have represented NC State sustainability on 22 campus and community planning teams or advisory boards.

Grow the Campus Environmental Sustainability Team (CEST) as a cross-campus team of faculty, staff, students and community members engaged in campus sustainability.

- Identify active roles to engage CEST members (funding, policy, communications, metrics, liaison to other groups, etc.)

  → Created a policy subgroup to craft a sustainability policy with accompanying energy and procurement regulations.

- Identify areas of key participation needed and involve decision makers.

  → Not complete.

Establish annual campus events to imbed sustainability as a part of the campus culture.

- Continue coordinating NC State's Earth Day celebration.

  → Rick Gardner, NC State's associate director of campus activities, served as the 2012 Earth Day chair and oversaw the following Earth Week events: Empower Film Series, Alternative Fuel Vehicle Showcase, Centennial Campus Field Day, Earth Day on the Brickyard and the Earth Day concert.

- Continue coordinating Campus Sustainability Day with an energy theme.

  → Campus Sustainability Day in 2011 was a fall fun festival with energy games, local pumpkin painting, a recycled costume contest and the announcement of the winning residence hall in the "Power Off" energy reduction competition.

- Supporting the integration of sustainability into existing events (athletic events, Wolfpack Welcome Week, etc.)

  → Through a partnership with NC State Athletics, NC State will have is first "green" football game on Sept. 15, 2012. Sustainability is well represented in Wolfpack Welcome Week planning.

COMMUNITY & CULTURE STRATEGIC GOALS

2011-2012 PROGRESS

Create incentives and provide recognitions and rewards to promote sustainability across campus.

- Identify mechanism and team to revamp the Earthwise Awards.

  → The Earthwise Awards were redesigned as the Green Brick Awards, resulting in a doubling of nominations received, an increase in prize amount and more representation from faculty and students. For the first time, the Green Brick was presented as part of an Engaged University community service presentation.

- Incorporate sustainability into new student and employee orientation.

  → In 2012 a team spearheaded by Waste Reduction and Recycling and the University Sustainability Office are working with the parents and families component of New Student Orientation to earn the designation "Wolfpack Certified Green." Additionally, sustainability groups will have tables at morning orientation sessions. The hope for 2013 is to scale the sustainability exposure and certification to the entire student orientation.

- Launch a green events program, "Certified Wolfpack Green."

  → Launched "Certified Wolfpack Green" and certified 12 events in the pilot phase.

- Create a plan, including incentives, for participating in the "Change Your State" behavior change awareness campaign.

  → Created a Facebook competition to increase awareness about energy conservation by encouraging students to visit the "Change Your State" website for more information. The contest resulted in a 52% increase in average monthly visits to the website.

ENERGY & WATER

The sun is rising for renewable energy at NC State

NC State's solar installations on campus range from a 75.6 kW system by Carter Finley Stadium that was the largest of its kind upon completion to a 112 collector pool heating system at Carmichael Gymnasium that saves the university roughly $11,500 per year. In 2011-2012, two renewable energy projects were completed:

- The 20 kW solar photovoltaic and wind turbine system at the university's Center for Marine and Atmospheric Sciences (CMAST) powers pumps, as well as heats and cools water for the aquaculture facility.

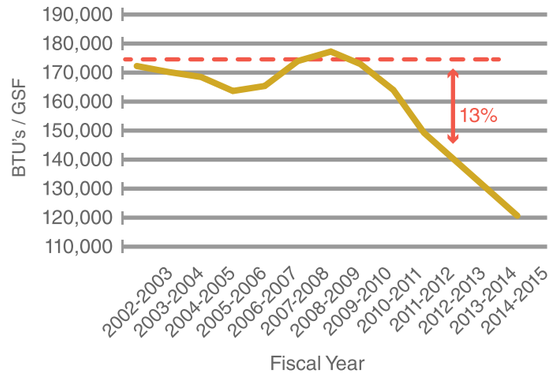
- At James B. Hunt Library, a new 12 collector solar thermal system preheats the building's domestic hot water, producing an estimated 88.2-million BTUs every year – equivalent to saving more than 15 barrels of oil.

Campus-wide, there are 53 solar thermal panels and 112 solar pool heating collectors that produce hot water. Producing electricity are more than 550 solar photovoltaic panels with a total of 143 kW installed solar photovoltaic capacity. But the potential exists for much more renewable energy on campus. The university continues to research ways to reduce cost and simplify process to allow more solar installations. In fact, NC State has been working with University of North Carolina General Administration and the State of North Carolina Energy Office on streamlining the process for third-party solar financing for state projects. The work that NC State is doing on this complex issue will hopefully help our university as well as other North Carolina universities meet their goals.

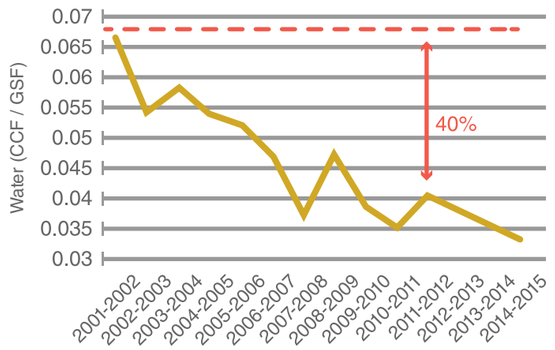
Program prepares future energy leaders

In July 2010, the N.C. Energy Office of the N.C. Department of Commerce funded the launch of the NC Energy Fellows Program with nearly $500,000 in support from the American Recovery and Reinvestment Act. From January 2011 until April 2012, 10 fellows helped establish North Carolina as a center for innovative energy strategies. These fellows gained considerable firsthand experience leading a host of initiatives at five locations: NC State Energy Management, NC Solar Center, NC State University Sustainability Office, the Future Renewable Electric Energy Delivery and Management Systems Center (FREEDM), and Advanced Energy. Special projects included developing campus outreach materials to promote sustainability programs, a statewide alternative fuels database and a feasibility study to deploy smart grid technology on NC State's Centennial Campus.

Campus Energy Consumption



Campus Water Consumption



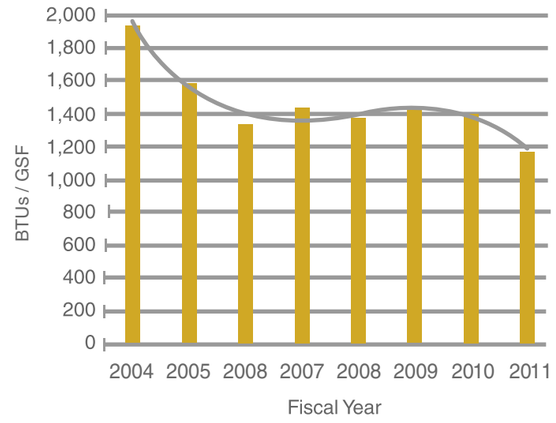
Decreasing energy demand during campus breaks

NC State's Intersession Setback Program – a campus-wide effort – saved more than $290,830 this year by intentionally decreasing power demand in buildings during low-use times. By lowering building temperature set points and turning off equipment and lights over winter break, more than $1.9 million in energy costs have been avoided since fiscal year 2004-2005.

Energy audits performed on 53 campus buildings

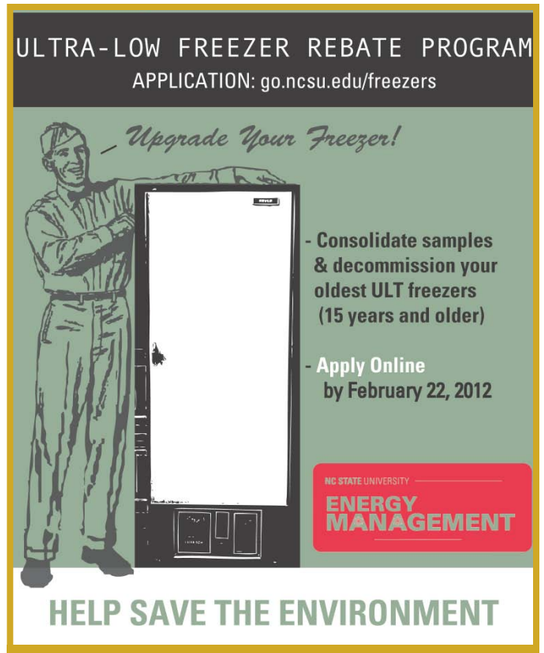
A team funded through an American Recovery and Reinvestment Act grant was charged with identifying and reporting energy saving opportunities at the 53 most energy-intensive buildings on campus. More than 150 energy conservation measures (ECMs) were identified, adding up to more than $1.9 million in annual savings with a payback of just more than one year. All findings were detailed in comprehensive energy audit reports that will serve as reference documents when funding is available to implement ECMs. During 2011-12, 35 ECMs were implemented.

The Intersession Setback Program has saved NC State more than $1.9 million



Replacing inefficient ultra-low temperature freezers

Six energy-inefficient, ultra-low temperature (ULT) laboratory freezers were upgraded with new energy-efficient units though a rebate program funded by NC State's Facilities Operations. The ULT Freezer Rebate Program matched 50% of the cost to purchase new energy-efficient units for colleges and researchers on campus. This upgrade alone is anticipated to reduce the university's annual electric consumption by more than $390,000. At a total cost of $57,769, this upgrade's return on investment was achieved in just two months.



In less than two months the Ultra-Low Temperature Freezer Rebate Program paid for itself with realized electricity savings.

Boosting efficiency with a cogeneration plant

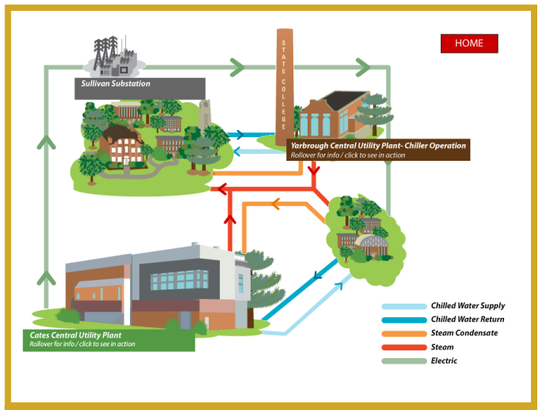
In January 2011, NC State broke ground on its combined heat and power plant, which is expected to reduce energy costs by more than $4 million in the first year alone as well as reducing the university's greenhouse gas emissions by 8%. Most utility plants use just 40 percent of the fuel they burn to produce electricity. Cogeneration is expected to improve the Cates utility plant to 75 percent efficiency by using wasted heat to generate steam, which will help meet heating and cooling needs for 8 million gross square feet of building space on the university's main campus. An interactive online demonstration tool was launched to explain how the cogeneration plant will operate and interact with campus.

Centennial Campus conserves energy for tenants

The Centennial Campus Development Office worked with Facilities Operations to identify three main areas of energy conservation measures to implement in the eight campus buildings it leases and manages:

- Older T-12 light fixtures were replaced with new T-8 fixtures and lower wattage bulbs in two buildings. High bays were retrofitted with induction bulbs in three buildings.
- Light sensors and mechanical system setbacks were upgraded in all eight buildings to reduce energy during unoccupied times.
- The thermal envelope was repaired with new door thresholds and joint sealants to help conserve resources.

These upgrades were funded from savings on natural gas purchases throughout the year.



An interactive online graphic explains how the new Cates Utility Plant uses cogeneration technology to reduce energy costs and lower greenhouse gas emissions.

ENERGY & WATER STRATEGIC GOALS

2011-2012 PROGRESS

Achieve a 30% reduction in building energy consumption by 2015 against the 2003 baseline.

- Establish Building Energy Audit Team and complete 50 building energy audits of appropriations- funded buildings.
  - 53 buildings have been audited.
- Install and commission two combustion turbines in the Cates Steam Plant by June 2012.
  - Scheduled to open in August 2012.
- Continue and improve the Intersession Energy Savings Initiative.
  - The results of three pilots to expand the intersession setback program suggest conducting the winter setback program only. This program will be revisited in 2014.
- Begin year one of the energy performance contract measurement and verification period for 13 buildings.
  - Three of the 13 buildings are complete and ready for measurement and verification. The remaining buildings are in the final project stages.
- Continue the implementation of the "Change Your State" behavior change and awareness campaign targeting a 5% reduction in electricity consumption.
  - Revamping of "Change Your State" is underway.
- Organize and implement the Phytotron self-performance energy conservation measures contract.
  - NC State has authorization from the North Carolina General Assembly to perform the work required. A designer and commissioning/measurement and verification agent was hired. The project is in the investment grade energy audit phase.
- Organize and implement a six building, self-performance energy conservation measures contract.
  - Scheduled for fiscal year 2013-2014.
- Upgrade general lighting in 24 campus buildings, including converting T-12 lamps to energyefficient T-8 lamps, plus occupancy sensors by December 2011.
  - Complete.
- Complete retro commissioning of Varsity Flex Lab by December 2011, including changing HVAC from outside air to plenum return as appropriate.
  - Complete.

ENERGY & WATER STRATEGIC GOALS	2011-2012 PROGRESS
• Install premium efficient motors and variable frequency devices in Jordan Hall exhaust fan system.	Not complete.
• Refine building automation schedules based on actual use at Park Shops and Withers Hall.	Complete.
Achieve a 50% reduction in building water consumption by 2015 against the 2002 baseline.	
• Establish Building Energy Audit Team and complete 50 building energy/water audits of appropriations-funded buildings.	An auditor team was created and 53 building audits have been completed.
Improve energy data management capabilities and make data-driven decisions utilizing enhanced energy data.	
• Establish a process to document realized energy savings for North Carolina House Bill (HB) 1292 concerning university energy savings.	NC State was the first academic institution in the University of North Carolina System to create a process for documented energy savings for HB 1292. As a result, NC State's process is now the standard for all entities reporting these savings. Last year, NC State submitted $1.6 million in energy conservation measures to the state of North Carolina to be returned to campus for additional energy conservation measures.
• Complete a utility meter long-range plan that will provide a roadmap for modernizing energy data collection on campus.	Phase I is complete, including rating all university meters in the utility tracking system based on criteria such as safety, functionality and communications ability.

ENERGY & WATER STRATEGIC GOALS	2011-2012 PROGRESS
Train and educate staff and building end-users to properly operate and maintain building systems in an energy-efficient manner.	
• Implement the "Shut the Sash" program to encourage energy savings in laboratories.	Instructional decals were applied on fume hoods concerning proper sash height for safety and energy. Additionally, awareness posters were displayed and lab occupant trainings were held to raise awareness of the energy used by campus fume hoods.
• Send 10 staff members to the Energy Management Diploma Series at McKimmon Center in 2011.	Complete.
Ensure a cost-effective and reliable energy supply by developing business scenarios and strategies for diversifying fuel sources.	
• Select a qualified energy risk management consultant to develop natural gas and fuel oil procurement strategies to ensure low cost and reliability by January 2012.	Hired an energy procurement consultant.
Evaluate utility financial structures that create incentives for saving energy.	
• Design a program to promote energy conservation through voluntary incentives to upgrade building equipment to the latest energy-efficient standards.	Six new freezers were installed on campus through the Ultra-low Freezer Rebate program. Additional funds will be sought in fiscal year 2012-2013 to continue the program.
Implement green standards and practices for information technology and computing.	
• Work with the Office of Information Technology (OIT) to form a subgroup around the issue of "green IT."	During the last year, OIT's governance structure underwent reorganization. Work is underway to include a green IT committee within this structure.

GREEN DEVELOPMENT

Two campus buildings receive LEED certification

All NC State building projects that are more than 20,000 square feet use the Leadership in Energy and Environmental Design (LEED) rating system as a third-party certification tool. The Facilities Operation Support Space, completed in May 2011, achieved LEED Silver certification—the first LEED certified project on main campus. In August 2011, the Student Health Center project, which included a 23,600 gross square foot addition and a 42,900 gross square foot renovation, became the first NC State building to achieve LEED gold certification. Included in the project are rain gardens, reduced impervious surfaces, underground cistern rainwater capture, reduction of light pollution from exterior light fixtures, public showers and bicycle racks.

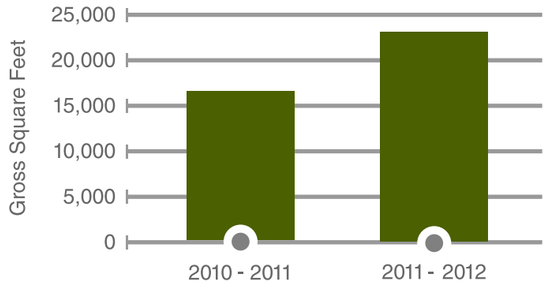
More sustainable interior finishes guidelines adopted

In efforts to maintain building safety and responsibly manage resources, new interior finishes guidelines have been added to the university's existing design and construction guidelines for all building projects, new projects and renovations. More stringent indoor air quality and manufacturer environmental responsibility standards will ensure high indoor air quality and also address end-of-life manufacturer recycling. In particular, carpets and carpet cushions must meet the Carpet and Rug Institute's Green Label Plus program and NSF/ANSI 140-2007 Standard at a minimum Gold level.

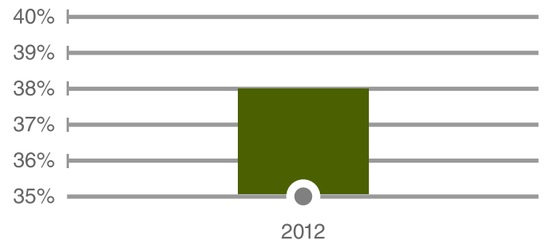
Recreational Sports Master Plan addresses space use

The Recreational Sports Master Plan was completed this fiscal year, providing a long-range strategy to address the growth of recreational space across campus. The plan identified ways to achieve efficiencies by using existing space and resources differently, how a change in use of underused spaces can address growth needs, and a multi-phased approach to renovating and expanding the Carmichael Complex recreation facility. The first phase of the Carmichael Complex renovation was implemented, renovating the entry to the facility and converting excess locker room space into additional weight and fitness space. The new master plan also identified space needs and locations for future outdoor sports fields and a satellite recreation facility on Centennial Campus, which would provide more proximate recreation opportunities to the growing Centennial Campus population.

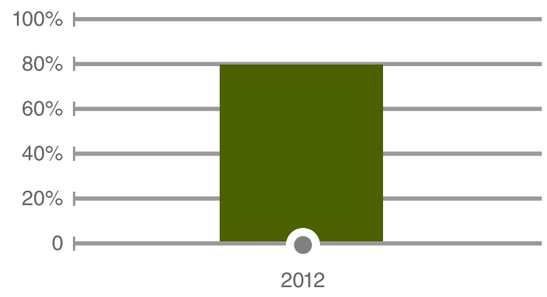
LEED Certified space on campus



Percentage of undergraduate students living on campus



Percent of Buildings within a 600-Foot Walk of a Courtyard, Plaza or Campus Street (as defined in the Physical Master Plan)



New Research Space Standard allows more efficient space projections

The new Research Space Standard adds a fourth discipline category to the previous three intensity categories of research space. By allowing planners to better understand the type of research space needed, space is more efficiently projected.

Student SOUL Garden expands

Located on Centennial Campus, the Students for Organic United Living (SOUL) Garden is NC State's first student-run community garden. The concept originated from a "Think Outside the Brick" sustainability competition and was established in spring 2010. In addition to providing students with a natural environment to foster education about gardening, the garden also provides fresh produce for student volunteers and the Inter-Faith Food Shuttle. SOUL Garden aims to be as sustainable as possible and employs conservation management practices that are accepted within the U.S. Department of Agriculture organic certification. In 2011-2012, the Centennial Campus Development Office partnered with the Office of the University Architect to help students expand the garden from just two 12' x 24' beds to four beds, plus structures to support the garden's management and a temporary flower garden. Planning is underway for future expansion.

The SOUL garden is located on Centennial Campus.

GREEN DEVELOPMENT STRATEGIC GOALS	2011-2012 PROGRESS
Update the Campus Physical Master Plan to integrate and coordinate transportation, land use, utilities, buildings and storm water planning.	
• Begin Physical Master Plan update.	Designer and project manager focus group meetings were completed late spring 2012. The advisory team's first meeting will be in fall 2012. Outline schedule has been created. Campus precinct meetings scheduled for September and October.
Adopt a sustainability vision statement and include it as part of the scope statement for all projects more than $500,000.	
• Create a sustainability checklist for projects more than $50,000.	Scheduled for completion in September 2012.
Integrate sustainable strategies for all new construction and renovation projects including, publicly owned, privately owned, and leased or partnership properties.	
• Develop and implement construction waste management plan for all projects more than $50,000.	Plan developed and was tested on a pilot project in July 2012.
Exceed NC State's established minimum commitment to achieve LEED silver certification.	
• Disseminate actual energy consumption for comparison with modeled projections.	Energy Management is working to develop the energy dashboard, which will be implemented for the first time on the new Hunt Library building.
Give priority to holistic building and property modifications that maximize efficient and effective resource use.	
• Tie energy efficiency/consumption data with Facilities Condition Assessment Program's (FCAP) deficiency data to indicate energy problems.	Energy audit information is being incorporated into the FCAP database as buildings are being audited by both internal staff and outside contractors.

GREEN DEVELOPMENT STRATEGIC GOALS	2011-2012 PROGRESS
Design new buildings and utilize existing facilities as long-term resources through adherence to life cycle cost evaluations and total cost of ownership analysis.	
• Develop interior finish guideline for NC State's Design and Construction Guidelines.	Complete and available on the university's Facilities website.
Enhance utilization and management of campus and building space to increase efficiency and to reduce the need for new construction.	
• Update the Research Space Standard to allow for more efficient use of space.	A new Research Space Standard has been adopted.
• Determine campus space needs based on 2020 enrollment projections.	The 2012 College Space Analysis began in March with the provost's approval of the 2020 Enrollment Plan, which projects student population to grow from more than 34,000 in 2011 to 37,000 by 2020. The Office of the University Architect has applied the space standards to the new total enrollment and met with the deans and the University Space Committee to review the amounts and types of space needed to accommodate this growth. Analysis was completed in August 2012 and will inform the Six-Year Capital Plan.
Create pedestrian-friendly, mixed-use neighborhoods to reduce the distance between necessary services and to avoid single occupant vehicle use.	
• Complete Bicycle and Pedestrian Master Plan.	The Bicycle and Pedestrian Master Plan is complete and is being implemented. The following three projects from the plan have been funded: 1) missing walk on Dan Allen Drive south of Western Boulevard, 2) New stairs with bicycle through from Morrill Drive to Rocky Branch Greenway, and 3) supplemental wayfinding signage on Rocky Branch Greenway.

GREEN DEVELOPMENT STRATEGIC GOALS	2011-2012 PROGRESS
• Participate in Blue Ridge Road planning.	NC State submitted comments to the City of Raleigh encouraging a more robust network of pedestrian paths in response to the Blue Ridge Corridor Study.
Increase the acreage of campus open spaces.	
• Complete Recreational Sports Master Plan.	Completed the Recreation Sports Master Plan, which identified the need for approximately 23 acres of sport fields on South Campus and Centennial Campus. Further study is needed to determine the location on Centennial Campus.
• Initiate study for locations of fields on South Campus.	Working on removing buildings along Varsity Drive to make way for recreation fields.
• Begin implementation of greenway along Walnut Creek.	Completed design of 1.1 miles of new greenways along Walnut Creek. The project has two areas of construction that will be completed in one phase: 1) Main Campus Drive to Lake Wheeler Road and a spur to the Farmer's Market, and 2) from North Shores to the university's western property line. After approval from the N.C. Department of Transportation, bidding on the project will begin.
Increase the percentage of undergraduate students living on campus to 44% by 2020 to reduce transportation needs and to enhance retention.	
• Continue planning for student housing at Centennial Campus (Wolf Ridge) and Greek Townhouses.	Wolf Ridge phase I is on target for completion in summer 2013 with phase II completion in summer 2014. The Greek Townhouse project is on hold.
Create and administer a Storm Water Master Plan for campus in conjunction with the NC State Storm Water Programs and the comprehensive Campus Master Plan.	
• Improve storm water management practices by initiating a study with the storm water group as a steering committee.	There are currently storm water studies for Centennial Biomedical Campus and Centennial Campus. Future efforts will create a broader team, which will evaluate existing plans and coordinate and expand toward regional approaches.

GREEN DEVELOPMENT STRATEGIC GOALS	2011-2012 PROGRESS
Improve and enhance campus open spaces, natural areas and habitats.	
• Increase the amount of natural areas on campus.	Grounds Management and Centennial Campus Development Office reduced mowing on Centennial Campus by 9.06 acres, allowing these areas, which are mostly adjacent to woods, to revert to their natural state.
Strengthen Tree Reforestation Plan for campus.	
• Initiate planning for Heritage Tree Program.	Gathered precedents for Heritage Tree Program and established committee to create a policy and implementation plan.
• Create Tree Conservation Plan for Greek Village.	The Tree Conservation Plan has been drafted but not yet submitted to the City of Raleigh for review.
Develop Land Management Plan for Lake Raleigh Woods.	
• Develop the Land Management Plan.	A committee is formulating how the components of the General Management Plan can be accomplished through incremental student projects. Not only will this minimize resource requirements, but it will provide excellent student learning experiences.
• Initiate study to remove invasive plants as part of a student multi-semester project.	
Employ best practices for sustainable operation of campus buildings and grounds such as integrated pest management, biodiversity, green cleaning, composting, recycling and water reuse.	
• Work to include sustainability principles in operational agreements.	To be undertaken in 2012-2013.

PURCHASING & WASTE REDUCTION

"Wolf Pack N Give" partners with local nonprofits to divert waste

As students moved out of campus residence halls in 2012, "Wolf Pack N Give" (formerly called "Wolf Pack N Go") diverted 31% of discarded material from landfills through the collection of donations, recycling and local nonprofit partnerships. A collaborative effort between University Housing and Waste Reduction and Recycling, "Wolf Pack N Give" places 13 Pack Rat donation containers near residence halls at the end of spring semester. Donations, which include clothing, furniture, household appliances, food and other reusable items, increased 56% this year. Local nonprofits The Green Chair Project, Dorcas Ministries and Better World Books sorted donations and utilized re-use networks to allocate donations efficiently.

New tool for zero waste campus events

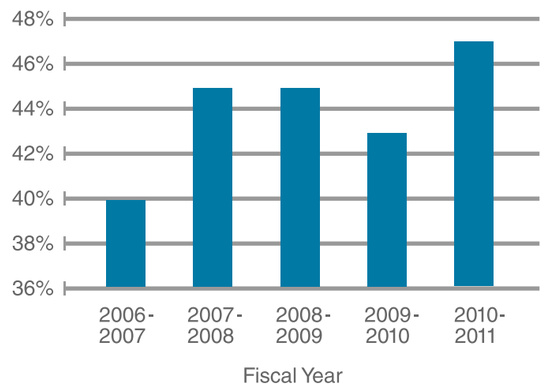
Waste Reduction and Recycling created a zero waste event toolkit to assist event planners in managing and minimizing landfill waste at campus events. The toolkit – available online – contains benefits and definitions of zero waste, educational materials and flyers, how-to instructions and a planning checklist. With more than 3,000 racers, as well as onlookers, the 8th annual Krispy Kreme Challenge strived for zero waste and successfully composted 3,222 pounds of Krispy Kreme doughnuts and boxes.

"Wolf Pack N Give" diverted 31% of discarded material from landfills during student move out in spring 2012.

Bins for electronics expand e-recycling efforts

On July 1, 2011, the North Carolina General Assembly passed legislation that recognized electronics as a resource - not a waste stream - by banning electronic components from North Carolina landfills. NC State currently recycles all major state-owned electronic devices, and smaller items can now be recycled easily through e-recycling bins located outside every campus building. These new bins allow campus staff, students and faculty to recycle items such as ink cartridges/toners, CDs, batteries and other small computer peripherals that have increased in use. NC State also hosts an e-recycling drive on America Recycles Day, educating about the environmental, economic and social benefits of electronic recycling. In fall 2011, the e-recycling drive collected 12,440 pounds of material from the campus and surrounding community.

Landfill Diversion Rates



"Clear streams" that hold compost, recycling and trash are used to create zero waste events.

Tons of material recycled, composted and landfilled

Self-service recycling reduces waste at the source

The best way to reduce waste is at the source. University Housekeeping and Waste Reduction and Recycling have collaborated to place everyday waste and recycling responsibilities on individuals, who now sort deskside waste and recycling into nearby centralized indoor collection sites. The initiative is a sustainable effort to reduce waste, promote reuse and increase recycling while creating individual responsibility for best waste management practices. Responsibility for indoor recycling collection shifted from Waste Reduction and Recycling to University Housekeeping, improving efficiency and providing opportunities for education and training.

Recycling bins added along campus walkways

Outdoor recycling and waste containers are being paired on walkways across campus to make recycling more accessible for pedestrians. Currently the program has more than 220 sites and anticipates adding another 100 sites in fall 2012.

Partnership with State Fairgrounds results in new recycling bins

NC State partnered with the State Fairgrounds to add recycling bins to the student tailgating lot. A $5,000 grant was awarded through the state of North Carolina Agency Bin Grant program for the purchase of 140 recycling containers to be utilized by both NC State and the fairgrounds during events.

Self-service recycling supports responsible waste management practices while reducing costs.

Encouraging "One Less Cup"

University Dining has collaborated with the Union Activities Board, University Sustainability Office, Waste Reduction and Recycling, and the Energy Management office to purchase reusable "BYO Cup" tumblers as part of the "One Less Cup" campaign for the 2012-2013 academic year. Campus dining patrons will be able to use these tumblers—or bring their own drink containers—at dining locations such as restaurants, cafes and C-Stores to receive discounts on their drink purchase.

University Dining committed to buying local and sustainable foods

University Dining launched a new "My Roots are at NC State" program to connect with local vendors, farmers, producers and manufacturers to increase the amount of sustainable and local food purchased. To build student interest, the program shares stories of NC State alumni who work for these companies, showing how their work helps provide food for campus. NC State also now has a partnership with the "Got to Be NC" program to assist in making connections with local growers, producers and manufacturers. These local companies will be featured on chalkboards in dining halls, informing patrons about University Dining's commitment to buying local and increasing sustainability.

NC State partnered with the North Carolina State Fairgrounds to secure a grant for 140 new recycling bins at Carter Finley Stadium

Clean Plate Club trims food waste

Initiated by University Dining, the Clean Plate Club was launched in the spring 2012 semester to encourage dining patrons to portion their meals and reduce waste. University Dining and the Center for Environmental Farming Systems (CEFS) held a "Weigh the Waste" event during which leftover waste was taken from the plates of diners and weighed. The average waste per person was 3.73 ounces, which represents a baseline from which to improve upon in subsequent years. Clean Plate Club volunteers encourage individuals to select smaller portions and come back for additional portions if desired. By continuously promoting this program, University Dining can effectively reduce dining hall food waste, which in turn helps the overall sustainability of NC State.

PURCHASING & WASTE REDUCTION GOALS

2011-2012 PROGRESS

Instill the values of total cost of ownership and total life cycle costing into purchasing and project decision making.

- Establish current confines of state legislation.
  - Assigned as an intern project.
- Work with Utilities and Engineering and Building, Maintenance and Operations to capture what is already being accomplished with regards to life-cycle costing.
  - Work to begin in future years.
- Utilize the Purchasing Department's Marketplace tool as a way to implement sustainable purchasing tactics.
  - Guided by state and university mandates, the Purchasing Department will narrow purchasing options through Marketplace to reflect sustainability starting in late 2012.

Achieve a 60% landfill diversion rate by 2015.

- Implement self-service recycling and waste management in all university buildings.
  - Completed through a partnership with Waste Reduction and Recycling and University Housekeeping.
- Further implement walkway recycling opportunities.
  - Implementation is 80% complete and the program continues to expand. Walkway containers are standard for all new projects on campus.
- Further develop composting opportunities on campus.
  - Composting is fully implemented in the university's dining halls. Future initiatives include implementing composting in catering venues and during special events.

Implement source reduction and environmentally preferable purchasing initiatives to decrease waste before it occurs.

- Ban plastic bag use on campus.
  - Hired a student intern to look at feasibility of these programs. The project focus has been primarily dining-related waste reduction opportunities for the Atrium and new Talley Student Center. Work will continue in fall 2012.
- Consider paper bags, trays and/or compostable bags as an alternative to plastic.
  - Hired a student intern to look at feasibility of these programs. Work will continue into fall 2012.
- Change font on e-mails to reduce ink consumption.
  - Not started.

PURCHASING & WASTE REDUCTION GOALS	2011-2012 PROGRESS
• Reduce packaging through purchasing practices including using less material and packaging and take-back options.	The draft of a Green Procurement Regulation to accompany the Sustainability Policy is in progress.
• Reducing phonebooks & Technician left-overs.	Not started.
• Develop repurpose/reclamation clauses for furniture and large purchases.	Developing bi-monthly workshops on waste reduction and purchasing topics, beginning in 2012-2013.
Increase the amount of environmentally and socially responsible materials purchased.	
• Provide goals and direction to foster sustainable purchasing.	The draft of a Green Procurement Standard Operating Procedure to accompany the Sustainability Policy is in progress.
• Develop a tracking system for sustainable purchases on campus.	Will be addressed in future years.
• Work with Marketplace vendors to highlight sustainable items on their electronic ordering sites.	Several vendors have initiated this. Development of a widespread initiative will involve additional research.
• Create incentives for purchase of more sustainable products and services.	This process will follow the adoption of the Green Procurement Standard Operating Procedure and Sustainability Policy.
Implement sustainable purchasing standards.	
• Help individual departments further develop the university's Sustainability Policy to focus on specific needs.	This process will follow the adoption of the Green Procurement Standard Operating Procedure and Sustainability Policy.
• Develop bid specifications that require vendors to provide sustainable options for their products.	Research is complete on what language, terms and conditions can be used for larger, current, buying consortiums. This information will be used for future bid specifications.

PURCHASING & WASTE REDUCTION GOALS	2011-2012 PROGRESS
Develop a comprehensive closed-loop program to capture organic waste (food waste, animal bedding, yard waste, etc.) for composting and utilize the composted product on campus.	
• Work with University Dining to determine materials and possible contaminants. • Order collection containers based on University Dining's needs. • Develop and submit request for proposals for the collection and composting of materials. • Train staff and place containers. • Educate campus community.	Complete.
Develop a more extensive outdoor walkway recycling program to capture additional recyclable materials and remove them from the waste stream.	
• Determine bin type and materials to be collected.	Complete. Commingled collection of glass, plastic, aluminum and paper is now standard for all outdoor walkway containers on campus.
• Purchase bins and develop educational materials.	Complete.
• Determine bin locations and collection strategies.	Complete.
• Place bins around campus and begin collection.	Project is 73% complete. Currently, 220 sites have the bins in place with an additional 100 to be placed in 2012-2013.

PURCHASING & WASTE REDUCTION GOALS	2011-2012 PROGRESS
Utilize modern waste collection concepts and practices to streamline services, improve programs and increase operational efficiencies and customer service.	
• Work with University Housekeeping to streamline indoor recycling collections.	University Housekeeping and Waste Reduction and Recycling now collaborate on the collection of materials.
• Examine necessity of full-size trash cans for desk-side recycling.	Mini-bin pilot program will begin summer 2012.
• Begin commingling recyclables.	Housing and Dining sites to become commingled in 2012-2013.
• Begin an education and marketing component of what's recyclable and why.	Ongoing.
• Add news/bulletin boards at recycling locations.	Not started.
• Add a message to vending machines about recycling (potential partnership with Coca-Cola).	E-recycling bins placed at all outdoor recycling sites.
• Enhance C-Store battery recycling program with a more attractive container.	
Increase the partnerships among NC State, local farmers, producers and manufacturers in North Carolina, resulting in more sustainable food purchases by University Dining.	
• Define sustainable food purchases.	University Dining will focus first on local foods defined as at least one of the following: grown, produced, manufactured or packaged in North Carolina. Dining will track other sustainable food purchases such as organic and third-party certified foods.
• Establish baseline for sustainable food purchases.	Focusing on local food purchases, the baseline for University Dining is 23% of the $11 million in food purchases. For dining halls, local foods accounted for 28% of the $4.5 million in food purchases.

PURCHASING & WASTE REDUCTION GOALS	2011-2012 PROGRESS
• Work with food suppliers to identify local foods that can be integrated into menus.	A temporary purchasing specialist was hired to work with US Foods, the university's largest food supplier, to evaluate what foods can be incorporated into menu planning. University Dining began partnering with the state's Department of Agriculture and the "Got to Be NC" campaign to identify local companies and products that could be integrated into university menus.
• Determine new ways to educate campus and have the community connect with local foods.	Launched the "My Roots are NC State" campaign that shows connections between NC State alumni and campus food. Continue "All Carolinas" meals, featuring North Carolina grown foods. Established a commitment that every University Dining event has a sustainability component. Plans are underway to install a chalkboard at each dining hall listing the local companies from which campus food is purchased.

TRANSPORTATION

12 electric vehicle charging stations added to campus

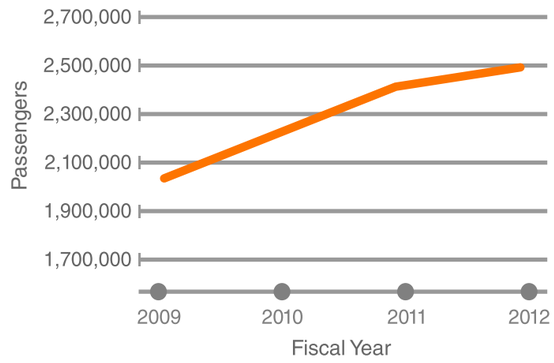
A dozen new plug-in electric vehicle charging stations were added in 2011, bringing the campus total to 16. Ten dual stations, which can accommodate two vehicles at a time, are located on five sites on Centennial Campus. Open to vehicles with an NC State parking or visitor pass, these stations were made possible by the Centennial Campus Development Office in partnership with the University Sustainability Office and through a U.S. Department of Energy Clean Cities grant. Two additional stations were installed in McKimmon Center parking lot across from the NC Solar House. Funded by Progress Energy as part of a grant to study electric vehicle charging habits, the station's installation was facilitated by the NC Solar Center, the university's Facilities Division and the McKimmon Center. Existing charging stations on campus are located at E. Carroll Joyner Visitor's Center and Keystone Science Center.

Steve Kalland, executive director of the NC Solar Center, addresses a crowd at the new electric vehicle charging station in front of McKimmon Center.

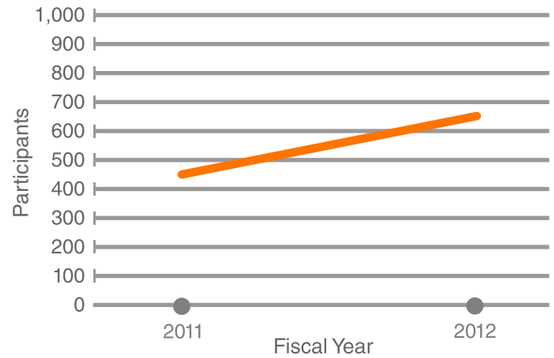
Bike maintenance workspace opens for campus cyclists

Beginning in fall 2011, Arts NC State and the Craft Center opened an on-campus bike maintenance workspace in collaboration with WolfWheels, the university's bike rental program. Located at the Craft Center, the workspace is a resource for those who utilize bicycles as a sustainable transportation option. The Craft Center also offers bike maintenance clinics, instructing more than 65 students, faculty and staff in the 2011-2012 academic year.

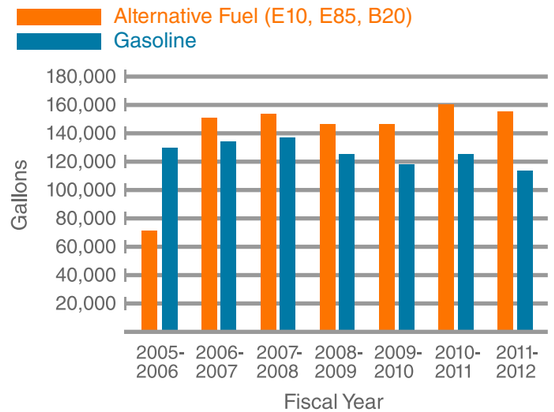
Passenger Boardings on Wolfline Bus System



Participants in Wolftrails, NC State's Alternative Transportation Program



Fuel Type Used in Facilities Operations Fleet



10-year plan aims to improve mobility on growing campus

In 2012, after a year of studying options and funding needs, the university's Transportation Office completed a 10-year plan for improving transit services and capital facilities. Recommendations in the Campus Mobility Plan include expansion of the Wolfline transit system's capacity to meet projected demand increases with more service hours, new routes and increased transit options between Centennial Campus and main campus. The plan also addresses the university's fleet size, vehicle mix and alternative modes for commuting and mid-day trips. By understanding and planning for future transportation capacity now, NC State is ensuring a robust, sustainable transportation network for tomorrow's campus.

Greenway extensions further campus connectivity

The extensive network of greenway trails on Centennial Campus was was extended 25 percent in the past year by the addition of a new loop and two bridges, which cross Walnut Creek near the recreation fields at Achievement Drive. Future plans would create access to the Farmer's Market from Centennial Campus, as well as a path to the Lake Johnson greenway. Funded by the Centennial Campus Development Office, the project was managed by the university's Design and Construction Services.

Dan Allen Drive closure opens safer, more sustainable transit options

To create more efficient bus transit and improve safety for pedestrians and bicyclists, Dan Allen Drive will be closed to through traffic (with the exception of transit, NC State service and emergency vehicles) between 9 a.m. and 5 p.m. beginning in fall 2012 . Vehicle volume along core campus roads will be monitored both before and after implementation to assess projected benefits.

TRANSPORTATION STRATEGIC GOALS	2011-2012 PROGRESS
Develop a long-term campus vision addressing alternative transportation, parking, campus connectivity and congestion in coordination with the comprehensive Campus Master Plan.	
• Develop Campus Mobility Plan.	The Campus Mobility Plan has been completed recommending future transit services and related capital needs during 2012-2022.
• Support development of Physical Master Plan update.	This tactic is still in the beginning stages, coordinated by the Office of the University Architect with participation from the Transportation Office.
Reduce the consumption of petroleum products in university and Wolfline fleets by increasing the use of alternative fuel and low-emitting vehicles.	
• Conduct best practices study of alternative fuel and low-emitting vehicles in use on other North Carolina college and university campuses to determine most cost-effective vehicles for the university motor pool and departmental fleets.	No formal study initiatives in place. However, the university motor fleet remains subject to a state mandate to achieve a 20% petroleum reduction by 2016. Future attainments will be focused on fleet upgrades and investment in new technologies, including alternative-fueled vehicles and battery-powered transportation equipment.
• Contract with a consulting firm attached to "Project Get Ready" to prepare a report on the potential size and growth of the electric vehicle (EV) market on campus over the next five years and the necessary charging infrastructure required to support the market.	No formal study initiatives in place. The Centennial Campus Development Office and the NC Solar Center continue partnering on EV station expansion. Public information on stations, locations and access restrictions are mapped by the Transportation Office.
Increase Wolfline ridership and ensure that Wolfline continues to provide a high level of service that meets user needs.	
• Analyze semester and annual campus Wolfline ridership data and trends to identify transit service capacity, issues and needs.	A base system and needs analysis has been conducted as part of the Campus Mobility Plan. Staff will streamline the tracking of key performance measures associated with short- and long-term system route and service changes.

TRANSPORTATION STRATEGIC GOALS	2011-2012 PROGRESS
• Monitor Centennial Campus facility construction, university staff and student levels, and private sector employment in relation to present and future Wolfline demands, especially inter-campus connectivity.	Bus service between main campus and Centennial Campuses has been adjusted to better meet projected rider growth and 24/7 activity levels, increased ridership along the Avent Ferry corridor, more diverse night service transit options, and park-and-ride capacity to the south of Western Boulevard.
• Market regional real-time transit information tools among students and staff to make travel easier and more convenient for commute and intra-campus trips by bus.	These tools have been and will continue to be promoted year-round via various campus media.
• Explore survey opportunities for employees and staff to best determine how transit is being used and how ridership can be increased.	The Regional "GoTriangle" brand is initiating consultations with NC State regarding a 2012-2013 mode pattern and preference survey of students and employees.
Improve bicycle and pedestrian access on campus.	
• Assist with Capital Area Metropolitan Planning Organization's (CAMPO) Western Boulevard/Avent Ferry underpass study and advocate for bicycle/pedestrian access.	Transportation Office staff members are engaged on the study advisory team with CAMPO staff and consultants.
• Add sharrows, where appropriate, around campus.	Primary campus cycling roadways have been determined for sharrows replacement.
• Close Dan Allen Drive through-access for vehicles to improve bicycle and pedestrian safety along the corridor.	Planning for the daily closure scheme is progressing and will begin during the fall 2012 semester. Baseline traffic counts are underway on campus roadways.

TRANSPORTATION STRATEGIC GOALS

2011-2012 PROGRESS

Research and develop more sustainable parking policies, including those that would increase carpools, shift parking to the campus periphery and prioritize parking of low-emitting vehicles.

- Explore partnership with the Farmer's Market lot to develop park-and-ride facilities on that site.

A plan has been established to construct a shared 200 space park-and-ride lot at the Farmer's Market in 2013-2014. An engineering/ environmental study is underway.

Develop and promote communications technology, such as teleconferencing and video conferencing, to reduce the need for travel.

- Continue the Center for Virtual Computing Lab.

Tactics for this strategy will be connected to the Green Information Technology Strategy.

EVENTS & AWARDS

2011-2012 EVENTS

Wolfpack Bound Trips: July 17 - July 22 and July 31 - August 5
Talley Groundbreaking: August 16, 2011
Wolfstock: August 18, 2011
Service NC State: August 2011
Artist's Backyard Ribbon Cutting: August 19, 2011
Fast-A-Thon: August 25, 2011
Campus Bike Tours: seven dates throughout August and September
Know Your Numbers: September 7, 2011
All Carolinas Meal: September 8, 2011
Campus Movie, *Ingredients*: September 15, 2011
Solar Exchange East: September 21, 2011
Bearcat Beatdown: September 22, 2011
Energy Awareness Month: October 2011
Canned Food Drive: October 1, 2011
Power Off 2011: October 1-28, 2011
National Wolfpack Service Day: October 15, 2011
Sustainability Interchange: October 15, 2011
Campus Movie, *Dirt*: October 20, 2011
World Food Day Celebration: October 26, 2011
Campus Sustainability Day: October 28, 2011
Envirovision Video Contest: October 28, 2011

America Recycles Day: November 15, 2011
A Composting Extravaganza: November 16, 2011
Re-Inspire Your Attire: November 30, 2011
The Big Event: January 21, 2012
Campus Farmer's Market: Every Wednesday from February to April
2012 Emerging Issues Forum: Investing in Gen Z: February 7-8, 2012
Dr. Barbara Bekken, assistant professor of geology at Virginia Tech presented, "The Earth Sustainability Integrative Liberal Education Project: Building a Curricular Model that Promotes Cognitive and Social Development": February 8, 2012
Speaker Kristin Skarie presented "Nothing New": February 21, 2012
Sustainability Alternative Service Break Trip to Costa Rica: March 2 – 10, 2012
Author Amory Lovins presented on *Reinventing Fire*: March 13, 2012
2012 NC Arbor Day Celebration: March 16, 2012
2012 Urban Design Conference: March 17, 2012
WolfWheels Commute Challenge: March 19-May 31, 2012
Rubbage Ride: March 24, 2012
Miranda A. A. Ballentine, Walmart's Director of Sustainability, presented on Walmart's productivity loop: March 27, 2012
Professor Tarla Rai Peterson from Texas A&M University presented "Composing Smart Grids: Society, Policy, Politics and Talking about a New Energy Future": March 30, 2012
WESACAT: March 31, 2012
Smart Commute: April 1- June 1, 2012
Empower Film Series, *Semper Fi: Always Faithful*: April 11, 2012
TEDxNCSU: April 14, 2012
Alternative Vehicle Showcase: April 18, 2012
Empower Film Series: Chimpanzee: April 18, 2012
McKimmon/NC Solar Center and E. Carroll Joyner Visitor Center Electric Vehicle Charging Station ribbon cutting: April 19, 2012
NC State Earth Day Field Day on Centennial Campus: April 19, 2012
NC State Earth Day: April 20, 2012
Earth Day Concert: April 20, 2012
Green Brick and Celebration of the Engaged University Awards: April 23, 2012
Butler Leadership Banquet: April 24, 2012
City of Raleigh Environmental Awards: April 24, 2012
Energy Council Open Forum on Smart Grid/Smarter Buildings: April 25, 2012
Sustainable Transportation Education Program (STEP) State Competition: May 5, 2012
Wolf Pack N Give: April 23 - May 13, 2012

BUSCH SYSTEMS LOGO CONTEST

NC State's Waste Reduction and Recycling Office was awarded $1,000 worth of recycling bins as a finalist in Busch Systems' recycling logo contest (February 2012)

NC AGENCY BIN GRANT PROGRAM

NC State's Waste Reduction and Recycling Office was awarded $5,000 through the state of North Carolina Agency Bin Grant program (March 2012)

RALEIGH ENVIRONMENTAL AWARDS

NC State co-sustainability officer Jack Colby received the "Legacy Award" and student Rachel Conley received the "Environmental Awareness Award" at the 2012 City of Raleigh Environmental Awards (April 2012)

STARS

NC State became a Sustainability Tracking and Reporting System (STARS) reporter (April 2012)

LEAGUE OF AMERICAN BICYCLISTS

NC State was named a "Bicycle Friendly University" by the League of American Bicyclists (April 2012)

PRINCETON REVIEW

NC State was included in the Princeton Review's Guide to 322 Green Colleges (April 2012)

GREEN BRICK AWARDS

Green Brick Awards (previously called Earthwise) for outstanding contributions to NC State sustainability were presented to student Chelsea Amato, staff member Anna Mangum and professor Dr. Stephen Terry (April 2012)

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EQUAL OPPORTUNITY STATEMENT