

**THE UNIVERSITY OF KANSAS  
2012 SUSTAINABILITY REPORT  
TO THE KANSAS BOARD OF REGENTS**

The University of Kansas remains committed to sustainability initiatives that protect our natural ecosystems, create economic prosperity, and treat all people with equality and respect. In February 2012, KU achieved a STARS Bronze Rating from the Association for the Advancement of Sustainability in Higher education, recognizing our sustainability achievements. The following outlines actions KU has taken in the past academic year, many of which have been documented through the STARS process, to address each of the six-implementation principles in the Kansas Board of Regents Sustainability Policy.

**LEARNING OPPORTUNITIES:**

As part of the STARS documentation process, the University adopted the following definition of sustainability in the curriculum:

*Sustainability education, along with related community service and research, provides students with the knowledge and information they need to be prepared, enlightened, and responsible members of our increasingly complex and diverse global society. Sustainability-focused and sustainability-related courses provide the foundation for a comprehensive understanding of sustainability.*

*Sustainability-focused courses fully incorporate sustainability and all of its interrelated principles - protecting our natural ecosystems, creating economic prosperity, and treating all people with equality and respect - or examine issues or topics using sustainability as a lens throughout the course. Sustainability-related courses incorporate sustainability as a distinct course component or concentrate on a single sustainability principle or issue.*

In 2011, 110 sustainability-focused and 289 sustainability-related courses were listed in the course catalog across 34 different academic departments. Some examples of these courses are:

- The Environmental Studies Capstone Course (EVRN 615) for seniors in the Environmental Studies Program, worked on campus-focused projects including increasing recycling, reducing inputs of fertilizers and chemical use on KU landscapes, and developing a community garden on campus.
- The fall 2011 Introduction to Applied Behavioral Science course (ABSC 101) honors section featured a capstone project that required students to apply behavior analytic principles and procedures to promote behaviors associated with the campus sustainability plan. Students shared their findings at an open house with the Principles of Environmental Planning class.
- The EcoHawks (ME 645), a senior design lab in mechanical engineering, installed a 3.68kW photovoltaic array at the field station north of Lawrence that should provide 30% of the average monthly energy usage for that building. Two teams of EcoHawks built parallel hybrid go-karts to promote STEM education in high schools. One of the go-karts will be awarded to a high school for use in their curriculum.
- Studio 804, a fifth year architecture studio, designed and built their fifth LEED Platinum building, Galileo's Pavilion at the Johnson County Community College.

**CAMPUS LIFE:**

Two new efforts to address energy conservation and sustainability were established in the spring of 2012. In February, March and April, KU partnered with our ESCO, Energy Solutions, to conduct a

“Lights Out!” energy savings competition between the occupants of Bailey, Green, and Summerfield Halls. The 12-week competition reduced energy consumption in the three buildings by a combined 14.3%, or an estimated \$2,500, as compared to the previous year when normalized for weather differences. The total actual savings during this time period, including electricity and natural gas costs, exceeded \$7,000. Fifty percent of the savings were returned to the participating schools, a first-step in considering a program that would move the energy budget to a school or department. Additional information about the competition is available at <http://www.energy.ku.edu/lightsout>.

As part of the Changing for Excellence initiative, an Energy Conservation & Sustainability Work Group has proposed a “building-by-building” approach to address building energy concerns and implement sustainability initiatives. Through this program, a team of faculty and staff will be involved in assessing a facility, identifying both technical and behavioral opportunities for resource conservation, and developing an action plan for implementing recommended improvements along with an education and outreach campaign. A pilot project for this program will be conducted in Fraser Hall in the fall of 2012.

The Center for Sustainability also established a bicycle advisory board to raise awareness about bicycling on campus and in the community, provide input on planning initiatives, and help implement bicycle-related strategies of the Campus Sustainability Plan. A new section has been added to the sustainability website (<http://www.bike.ku.edu>) with resources on bicycle safety and maintenance as well as riding tips.

In addition to these new efforts, existing programs that foster sustainability in campus life were enhanced over the past year:

- Information fairs at summer orientation featured sustainable living and traveling tips for students preparing to come to campus.
- Photos of students committing to sustainability actions taken during the “Hawk Week” event at the Kansas Union were posted on the Center for Sustainability’s Facebook page.
- The Sustainability Ambassador Program, comprised of individuals representing over 70 campus departments and student organizations, continued to meet monthly over the lunch hour to learn about and take tours of campus sustainability projects. The group addressed new topics including food, hunger, and the cognitive impacts of spending time in nature. A program to encourage participation and to recognize their individual contributions to sustainability will be implemented in the fall of 2012.
- Five new offices participated during the 2011-2012 year in the Green Office Recognition program begun in 2010; 32 campus departments and offices are now recognized as making an effort to reduce environmental impacts and create a more sustainable workplace.

To highlight sustainability initiatives throughout campus, including progress in operations and academics, the Center for Sustainability publishes the “Sustainability Spotlight” monthly online at <http://www.sustainability.ku.edu/ambassadors/spotlight.shtml>. Sustainability Ambassadors assist in distributing the newsletter electronically within their departments, and a link to new issues is included in the KU Today email that is sent to all faculty and staff.

## **OPERATIONS:**

Implementation continued on energy efficiency projects through KU’s performance contract with Energy Solutions Professionals (ESP), addressing aging heating, ventilation and air conditioning equipment and inefficient lighting. Construction was completed in December 2011 and the project resulted in \$547,110 in savings, about 60% of the guaranteed amount, during the first 6 months of the post-construction period (January-July 2012). Savings during the construction phase of the project totaled nearly \$1.5 million. ESP continues to maintain a presence on campus to implement behavioral change components of the contract.

Facilities Services is in the process of implementing an enhanced asset management system (MAXIMO). Among other benefits, this unified asset management system will facilitate preventative maintenance and provide richer data on the performance of individual building and infrastructure components and systems.

Steps have also been taken to encourage more efficient and alternate modes of transportation. In January 2012, Parking & Transit launched a Hertz on Demand car-share service. The program supports an alternative to bringing a car to campus, as members of the campus community now have access to a car for short-term use. Additionally, the bus fleet continues to gain efficiencies with 5 older buses retired this year and 3 hybrid diesel/electric buses operating on a city/campus shared route. During the call for FY 2013 vehicle replacement purchases, departments were encouraged to assess the intended use of the vehicle and consider selecting more efficient vehicles that will help “reduce both the fiscal and environmental impacts of the campus fleet.”

New procurement contracts negotiated as part of the Changing for Excellence initiative will also realize both economic and environmental benefits. Office supplies shipped by Staples from the local fulfillment center will use “Smart-Size” packaging, customizing box sizes to the size of products being shipped. This reduces packaging waste and environmental impacts associated with transportation. Standard desktop and laptop computers identified through an agreement with Dell will be EPEAT Gold certified, resulting in greater energy efficiency and recyclability and few harmful materials used in production. A renewed agreement to lease multifunction devices will result in reductions in paper and toner purchases; a Changing for Excellence pilot project indicated the MFDs are being used to scan to email or a shared drive instead of printing through these devices. KU Surplus is working with Information Technology to recover and donate working desktop printers that are being removed as departments shift printing to MFDs. Changing for Excellence initiatives in Facilities Services, Human Resources, and other areas have also reduced the amount of paper used for business operations by stream-lining processes and moving to electronic formats.

Facilities Services continues to focus on waste reduction efforts by providing recycling services as well as surplus property collection and redistribution services. In FY 2012, nearly 680 tons of material, including scrap metal and secure shredded paper, was recycled on campus, and 5,269 surplus items, including office furniture and equipment, were diverted from the landfill and redistributed to campus departments or local non-profit organizations. Each May the KU Environmental Stewardship Program works with Student Housing and area non-profits to collect and redistribute items donated by students moving out of the residence halls so that they don't end up in the waste stream. In the spring of 2012, the program collected and redistributed 9,757 pounds of clothing, shoes, towels and bedding, 1,672 pounds of food, and 320 room furnishing items.

The University of Kansas continues to improve landscaping practices. Facilities Services limits application of fertilizers and pesticides on campus, and maintains a majority of campus lawns without chemicals. Partnering with Design & Construction Management, FS Landscape staff continue to evaluate the effectiveness of chemical free maintenance of campus rain gardens, bio-swales, and lakes. In an effort to maintain Potter Lake, for example, students have volunteered to remove vegetation from the lake each fall to help reduce nutrient loading and resulting algae blooms. To address the loss of trees over past decades to storm damage, disease, and construction, a Campus Tree Advisory Board was appointed. The first project of the board was to establish a Replant Mt. Oread campaign to encourage donations for tree planting efforts on campus. In spring 2012, Replant coordinated the planting of redbud trees on Jayhawk Boulevard as part of an Arbor Day event that included students in the plantings. The goal for this project is to involve the campus community in planting trees each spring.

## **CAMPUS PLANNING:**

Design & Construction Management has been coordinating the energy audit of campus buildings required each year by the State of Kansas. Audits have been completed for 2011 and 2012. In 2011, 13 of the 40 buildings audited were identified as having energy use in 2010 that was 10% or more above benchmark levels. DCM has requested proposals for energy analyses of these buildings to identify ways to improve the energy efficiency to at least 10% below the benchmark levels. The 2012 audit identified all of the next set of 40 buildings to have a 2011 energy use per square foot below benchmark levels. DCM has also established an on-call service contract for building commissioning and testing services and is requiring an alternatives analysis as part of the HVAC system design for new buildings.

Although the University of Kansas does not pursue LEED certification to conserve limited funding, Design & Construction Management has adopted performance standards and life-cycle perspectives that result in more efficient and sustainably designed facilities. All new buildings, major additions, and major renovations are required to exceed ASHRAE 90.1 (2007) energy efficiency standards by a minimum of 30 percent. A 28 percent improvement over ASHRAE 90.1 equates to 6 of 10 extra points in the LEED system and a 31.5 percent improvement equates to 7 of 10 extra points in the LEED system. Combined with other criteria, most, if not all, new building and major renovation at KU effectively meet or exceed LEED Silver criteria. These standards include plantings and light colored roofing materials to reduce heat island effect and provide insulation; eliminating ozone-depleting refrigerants; reusing building materials and components where possible; installing high efficiency water fixtures; minimizing and avoiding the use of building materials containing hazardous compounds; and incorporating building components that provide research and educational opportunities.

Several examples illustrate the ways DCM is implementing the performance standards. Standardized use of occupancy sensors for room lighting is incorporated and LED lighting is installed where feasible. In partnership with the Kansas Memorial Unions and KU Athletics, salvaged stone blocks from the exterior of Allen Fieldhouse were installed in the newly renovated Alderson Auditorium in the Kansas Union. The M2SEC Building, opened this semester, incorporates removable panels that enable researchers to evaluate the performance of various building materials. Both M2SEC and the BEST Building on the Edwards Campus have white membrane roofs. In the recent reconstruction of Constant Avenue, concrete pavement was used instead of the traditional asphalt pavement. While the capital investment for concrete is higher, the useful pavement life is significantly greater along with reduced operation and maintenance costs. Concrete pavement instead of asphalt also provides a higher albedo, reducing heat absorption.

Land use decisions on the KU campus also reflect the commitment to sustainability. The ongoing expansion of the School of Engineering is in-filling prime real estate. The M2SEC Building was completed in 2012 in front of Learned Hall and adjacent to Burt Hall. Learned Engineering Expansion Phase 2 (LEEP2) construction is scheduled to begin in 2013, following an initial round of underground utility and site improvements for the project in 2012. LEEP2 will infill and connect Learned Hall to the M2SEC Building. A portion of Burt Hall will be razed and another portion will be repurposed as a chiller building for LEEP2.

In 2012, DCM was awarded a \$450,000 KDHE grant (a loan with principle forgiveness) for reconstruction of Parking Lot 54 with pervious pavement to capture and infiltrate storm water runoff into the subsurface and incorporate rain gardens and bioswales. The project is scheduled for construction in the summer of 2013. This parking lot is in a high-profile location on campus, bounded by 15th Street on the north, Naismith Drive on the east, Irving Hill Road on the south, and across from the School of Engineering, helping foster interest in this relatively new pavement system. The reduction in storm water runoff will help alleviate flooding of the overloaded city storm sewer system to the south.

## **ADMINISTRATION:**

The new strategic plan for the Lawrence and Edwards Campus, *Bold Aspirations*, includes four themes that set the priority for research investment for the next five years. Three of these address sustainability-related research: Sustaining the Planet, Powering the World; Promoting Well-Being, Finding Cures; and Building Communities, Expanding Opportunities; the plan includes additional educational goals that support sustainability education, which include enhancing student learning through experiential learning and redesigned courses.

As part of the *Changing for Excellence* initiative, approaches to energy conservation and sustainability will be tested through the fall of 2012. The goal is to develop a program utilizing a building-by-building approach to assess facilities, identify energy conservation and sustainability measures, and put leadership teams in place to assist with ongoing implementation and assessment that will maximize efficiencies within the building.

Both of these major initiatives are supported by the campus sustainability plan, *Building Sustainable Traditions*. The sustainability plan was released by Chancellor Gray-Little in October 2012 and establishes a broad vision and overarching goals for 9 key administrative, academic and operational areas, along with specific action steps. The plan is used as a guidance document for planning and operation by the Center for Sustainability and other campus departments. The complete plan is available for download, along with an update on progress toward the goals of the plan, at <http://www.sustainability.ku.edu/Plan/>.

One initiative that resulted from the plan was the Campus Tree Advisory Board. Efforts are under way to develop a campus tree care plan along with a policy for a minimum of 1:1 tree placement. Development of these policies and dedicated annual expenditures would make the campus eligible for the designation as a Tree Campus USA.

The University is also working to update the campus master plan, which will be aligned with *Bold Aspirations* and *Building Sustainable Traditions*. The campus master plan will guide campus growth and regeneration in ways that preserve the best aspects of KU's rich history and lead to a more sustainable future. In addition, Design and Construction Management is leading a project to prepare an historic district nomination for the campus. Historic district designation will further assist in preserving the natural beauty, cultural significance, and environmental benefits of these green spaces.

Addressing issues of social sustainability, a full-time campus Director of Accessibility and ADA Education was created to coordinate existing available services and resources, research and implement new or improved services and resources to meet campus needs, and ensure that the best ADA practices are applied consistently University-wide. The position is part of the newly formed Office of Institutional Opportunity and Access.

## **OUTREACH:**

Major outreach efforts continue to be supported through research, service, and engaged learning. As part of the STARS process, the University adopted the following definition of sustainability research:

*Sustainability research leads to a deeper understanding of the conditions that facilitate a balance of economic prosperity, social well-being, and ecological health. Fostering sustainability-related research creates new opportunities for collaboration and advances sustainability initiatives on campus in the KU "living laboratory" and in the broader research community. Sustainability research can focus on bringing the key principles of sustainability (environmental, economic, or social) together, address a sustainability challenge, or focus on*

*particular principles individually, but it all seeks to understand the broader implications of our interconnected society and environmental challenges.*

In 2011, the Center for Sustainability identified nearly 170 faculty members from 29 different departments who are engaged in sustainability research. Many of the major research projects within this inventory include outreach components. One example is the *Climate Change and Renewable Energy* initiative, a massive research endeavor that has the potential to significantly affect the Kansas economy. More than 60 Kansas scientists are collaborating on the project, including a team of faculty at KU. Dietrich Earnhart, Professor of Economics at KU and colleagues are assessing how farmers make cultivation choices, leading to more informed policy decisions on biofuel and food crop cultivation, land conservation and surface water quality. Judy Wu, University Distinguished Professor of Physics at KU, leads scientists and engineers are using nanotechnology to make major advances in solar energy capture and conversion. And, Dan Wildcat, Acting Dean of the School of Natural & Social Sciences at Haskell, and Joane Nagel, University Distinguished Professor of Sociology at KU, are exploring climate change and energy issues with tribal college students on Native American lands, while developing an pathway for Native American students and community college teachers to earn advanced degrees.

In addition to these research efforts, faculty are involving their students in hands-on learning opportunities that benefit local communities. For example, the School of Architecture, Design and Planning (SADP) created sustainability visions and detailed plans for the *Creating Sustainable Communities* project of the Mid American Regional Council in the Kansas City area. The school's three departments collaborated to produce the following:

- ***The Rock Island Corridor Plan – Trails and Transit for Sustainable Development:*** Students in land use and transportation classes created a strategy to transform the abandoned Rock Island Corridor railroad right of way into a bike/hike trail with future opportunities for bike/transit oriented development. The plan is being used by the Rock Island Corridor Steering Committee to guide development.
- ***State Avenue Strategies - Redevelopment along Major Transit Corridor – Kansas City, KS:*** Students in an economic development class identified vacant and extremely rundown parcels and developed detailed cost parameters for feasible redevelopment in KCK. The City is using the work to identify real projects for possible tax increment financing. The Architecture department may develop designs for these sites. Students in the Urban Design Implementation class reviewed existing design overlay districts for the city's central business district and proposed floor-area-ratio limits.
- ***Tactical Urbanism Event - First Friday Art Walk, Crossroads District:*** The Design and Urban Planning departments collaborated on a tactical urbanism exhibit in the KC Crossroads Arts District. Tactical urbanism uses communications and graphic design to promote long term change and sustainability. Hundreds of people attended and voted on projects that included challenges to reinvent parking spaces and use active transportation modes.

The Center for Sustainability also continues to serve as a resource on campus sustainability, sharing information about campus initiatives through its websites (<http://www.sustainability.ku.edu>, <http://www.energy.ku.edu>) and Facebook page. Links to publicly available reports and ratings of KU's sustainability initiatives are also available on the Center's website, including the 2012 STARS report (<https://stars.aashe.org/institutions/university-of-kansas-ks/report/2012-02-15/>), a comprehensive campus sustainability self-assessment.