



Facilities Management
Statement of Sustainable Practices
November 2006

University of Arkansas Facilities Management (FAMA) is responsible for utility operations and maintenance, design and construction coordination, and building operations and maintenance for 96 structures with 3.5 million gsf of education and general (E&G) space, other campus facilities, and 560 acres of campus grounds (exclusive of agricultural farms). The department has demonstrated responsible compliance with environmental and safety regulations, and applies these considerations to planning decisions that reflect a balance of economic, environmental, and socially responsible values in support of the University's academic mission.

In planning for growth, Facilities Management will help position the University of Arkansas as a competitive and innovative leader in sustainable practices. The department will guide University practices toward sustainability through the management of energy, building design, construction, renovation, landscape, water, waste, procurement, emissions, transportation, human health, and productivity.

To address energy and environmental challenges, Facilities Management has the following goals:

- *Reduce energy and water usage in University buildings;*
- *Reduce energy and water usage in campus landscapes;*
- *Promote green buildings;*
- *Reduce/eliminate volatile organic compounds (VOC's) in new and renovated buildings;*
- *Address climate change;*
- *Develop a comprehensive stormwater management/watershed management plan;*
- *Encourage diversity in energy generation;*
- *Promote use of energy from renewable sources;*
- *Improve University vehicle fleets;*
- *Encourage incentives to improve vehicle fuel efficiency;*
- *Promote transit and a walkable campus;*
- *Employ architects, engineers, commissioning agents, and general contractors with experience and/or knowledge of the principles of sustainable design; and*
- *Share best energy and environmental practices with other institutions in Arkansas and neighboring states.*

Utilities

In fiscal year 2006, the University of Arkansas spent \$11.57 million in heat and air conditioning, lights, and other energy-related costs for 50 academic buildings, a figure that does not include athletic and residential system expenditures. Energy costs were so volatile that the University found it necessary to spread \$2 million in increased natural gas costs over the campus budgets for the coming two to three years. The campus is aggressively pursuing energy-saving investments, including energy-saving upgrades, a \$14.5 million renovation of the central steam plant, and \$3.8 million in upgrades to the John D. Tyson Center of Excellence for Poultry Science.

CURRENT AND RECENT EFFORTS INCLUDE:

- An energy audit of selected representative campus buildings, sponsored by a Rebuild Arkansas Special Projects grant (2006)
- A Building Metering and Controls Upgrade (BMCU), which included the installation of building-level utility metering and controls improvements to implement energy conservation measures and energy improvements (2004 - 2006)
- Chilled Water Plant upgrades, including the replacement of inefficient equipment and the conversion to variable flow to reduce energy use (2005 - 2006)
- A cross-connection control program that protects the potable water within campus facilities and the public water system from contamination by backflow, back pressure, or back siphonage (established 2004 - 2006, now ongoing)
- A certification process that provides records of testable backflow assemblies on campus (established 2004 - 2006, now ongoing)
- Numerous deferred maintenance projects, including upgrading inefficient mechanical and electrical systems
- First two Energy Performance Service Contracts (ESPC) in the state (estimated completion 2007 - 2008)
- A compact fluorescent relamping effort, coupled with ballast replacements (ongoing)
- Test sites for waterless urinals at Innovation Center and the first floors of the J. B. Hunt Transport Services, Inc. Center for Academic Excellence and Willard J. Walker Hall (ongoing)

Buildings

As buildings are a major source of demand for energy and materials, the University of Arkansas encourages the use of sustainable design principles in order to reduce the total cost of long-term ownership and to create buildings designed to reduce dramatically their environmental impact. Facilities Management understands that green design has financial and social benefits beyond utility bill savings, and that green buildings have been shown to have a large positive impact on school attendance and performance, employee productivity, and health gains. FAMA also recognizes that a building's initial construction cost represents only 20-30 percent of the building's entire costs over its life, and is now placing additional emphasis on the "life cycle costs" of building in addition to initial capital costs.

The University has been incorporating sustainable design principles in its projects since 2004 by guiding design teams to follow green building precepts in all new buildings and renovations. Architects and Engineers working on campus are now required to submit a documented design intent, which is validated by the Commissioning Agent throughout the project. (LEED® "Certified" or the Green Globes equivalent rating of "One Globe" was the initial benchmark in 2004, and was increased in 2006 per below.) Facilities Management has also initiated Partnering and Commissioning on all projects to promote cooperation in the process and provide validation of delivery of sustainability in the resulting building. To promote this further, FAMA has adopted the following language in the Design and Construction Guide for Buildings and Landscapes:

SUSTAINABILITY AND CONSTRUCTION

New campus buildings and full-building renovations will observe the following sustainability criteria. All projects with a construction cost greater than \$1 million must meet these standards, while projects with a construction cost less than \$1 million should incorporate sustainable design principles to the fullest extent possible.

- Reduce the life-cycle cost of facilities by incorporating sustainable design principles in the planning, programming, design, construction, operation, maintenance, restoration, and renovation of all facilities and infrastructure projects, consistent with budget and University requirements. Strategies may include proper siting, building form, glass properties and location, material selection, and incorporating natural heating, cooling, ventilation, and day-lighting techniques.
- Use the US Green Building Council's LEED rating system OR the Green Building Initiative's Green Globes rating system as a tool in applying sustainable design principles, and as a measure of the sustainability achieved through the planning, design, and construction process. A LEED for New Construction and Major Renovations rating of SILVER (33-38 of 69 possible points) or the Green Globes equivalent rating of TWO GLOBES (55-69% of 1000 total points) is the standard to which University projects will be held. [NOTE: At this time, the University is not requiring formal certification of most its projects, though some projects may. However, the design and construction team will be required to submit a checklist and narrative to substantiate the measures taken to achieve the equivalent of the certification levels desired.]
- Provide a life-cycle economic analysis of the sustainable strategies and features of the building, as well as an energy cost model that addresses all building system costs, such as building envelope, HVAC, and electrical systems. This analysis must be prepared by the designers of each project and submitted to the University for review of design intent.

BUILDING COMMISSIONING

A third-party commissioning agent will be hired by the University as part of the project team. This agent will work with the building committee and alongside the design team from schematics through the warranty period, and will certify design, installation, and operation of all mechanical equipment as well as training of the operations and maintenance team. The commissioning agent will also validate delivery of the stated design intent for the project.

GREEN BUILDING PROJECTS AND INITIATIVES:

- The Innovation Center at Arkansas Research and Technology Park was the first LEED certified building in the State of Arkansas (2004). The building was completed \$300,000 under budget, and won an Honor Award for design from the Arkansas Chapter of the American Institute of Architects.
- A green roof demonstration project was installed at the Gatehouse at The Gardens (2006). Plant material survival rates, cooling effects, and runoff reduction of the roof will be monitored by faculty and students of landscape architecture and civil engineering.
- Four on-call, commissioning agents were placed under contract for all major construction and renovation projects (2006).
- Language was added to all RFQ's for architects, engineers, and general contractors, listing demonstrated experience with sustainable building systems design and construction as an evaluation selection criteria (2006).
- The University has been a member of the Arkansas and National Chapters of the U.S. Green Building Council (since 2005).

Sites and Landscapes

The University of Arkansas campus is planted with mostly native trees (oak, hickory, and maple), complemented by drought-resistant lawn areas without irrigation systems. Facilities Management has planted over 3,000 trees in 40 varieties since 1991. The Grounds crews work to minimize the use of landscape chemicals, reduce overseeding and off-season mowing, and reduce water consumption.

SITE FURNISHINGS STANDARDS

Facilities Management recently completed a 3-year process, which involved cataloguing existing campus site furnishings and setting new standards for all future purchases. FAMA conducted a lengthy search for furnishings that, while providing a coherent aesthetic for the campus, would also be durable, long lasting, and environmentally responsible. (For example, selecting materials that are naturally durable, such as teak for benches, helps to minimize maintenance costs and eliminate the need for paints or other chemical sealers. Using cast-iron or steel when possible, instead of aluminum, saves energy, considering that aluminum requires twice as much electricity as steel to produce.) Equally important was choosing companies with a commitment to sustainability. Fermob, which manufactures the specified café tables and chairs, produces no emissions at its plant, and only uses wood from sustainably managed forests.

Lighting design, in particular, is a complicated issue, which affects energy consumption, light pollution, and student safety. FAMA worked with lighting engineers to determine, in accordance with IES guidelines, correct spacing for safe lighting conditions, while also reducing energy consumption by using low-wattage and compact fluorescent lamps and eliminating light pollution with cut-off luminaires. In addition, FAMA is exploring use of solar powered emergency telephone kiosks and signage, and LED street lights, security lights, and emergency lighting, etc.

The new site furnishings standards were measured against these goals:

- Any wood specified to be ecologically harvested (identified as a renewable material by the Green Globes rating system)
- All materials recyclable
- Specify products manufactured with recycled materials where possible / post-industrial content where possible
- Specify coatings without heavy metals and low VOC, where possible
- Specify metal fixtures of steel or cast iron, instead of aluminum, where possible
- Specify cut-off lighting fixtures to meet dark-sky standards
- Provide compact fluorescent lamps where possible / reduce metal halide wattage by half
- Design layouts to take advantage of low-wattage lamps while improving overall safety

BROWNFIELD AND CLEANUP INITIATIVES:

- Legacy Waste radiological contract completion (2006 - 2007)
- Harmon Rd LLRW radiological and chemical site cleanup (2006 - 2007) - return to unrestricted use (2007 - 2008)
- Gregg site chemical cleanup completed - first return to unrestricted use site cleanup in Arkansas (2003)
- Continuing efforts to deconstruct SEFOR (Southwest Experimental Fast Oxide Reactor), a deactivated experimental fast breeder reactor located near Strickler, Arkansas. The site is still contaminated with radioactive material, asbestos, and chemical residues. The university is seeking \$16 million (as of 2005) in funding for decontamination work. Arkansas Senator Blanche Lincoln began trying to secure funds to clean up the site in 1999. In 2005, she introduced legislation to decommission and decontaminate SEFOR in the Energy Policy Act of 2005. Although the bill authorizing \$16 million was approved and signed by President George W. Bush, actual funds for cleaning up the site were never appropriated. A return to unrestricted use is the ultimate goal.

CURRENT AND RECENT PROJECTS AND INITIATIVES:

- Installed Grasspave© pervious parking surface at The Gardens, instead of the 165-space impervious concrete lot proposed / reduced existing impervious area by 1 acre (2006)
- Used compacted gravel walking paths in lieu of concrete at The Gardens (2006)
- Installed first solar-powered, in-pavement crosswalk edge lights (2005)
- Continued work at Arkansas Research and Technology Park, including a site infrastructure plan that incorporates alternative pavements, stormwater management systems, creek restoration projects, etc.
- Completion of Spill Prevention Control Countermeasures (SPCC) Plans for critical campus locations, particularly focused on fuel and hazardous materials storage near watersheds.
- Reduced landscape chemicals to two (2), of which Roundup® is most commonly used. (The herbicide 2,4-D is still used sparingly, though continued use will be studied.)
- Reduced chemical and herbicide treatments by at least 70% since 2003.
- Developed a partnership with local Arkansas Audubon Society and the Environmental Protection Agency on the Mullins Creek interpretive trail and restoration project.
- Beginning work (with Center for Advanced Spatial Technologies and others) on a Stormwater Management and Watershed Management Plan for campus.
- Began recycling sawdust, generated by the carpentry shops, by using it to provide safe walking surfaces during ice and snow events.
- Developing a stencil to be used on every storm drain on campus, warning against polluting the drain because it empties into the river.
- Installing Grasspave© pervious parking surface at Fowler House (Chancellor's Residence), reducing impervious surfaces at overflow and event parking areas (2007).

Transportation Planning

The Campus Transportation Plan, completed in 2005, provides a strategy to address the University's current and future transportation needs. The Plan reflects the University's commitment to sustainable and responsible growth. It focuses on transportation plans and policies that meet the growth challenge while addressing the sustainability goal and enhancing the campus environment. The Campus Transportation Plan presents recommendations for Streets, Transit, Bicycles, Pedestrians, Travel Demand Management (TDM) programs, and parking that balance convenience and safety with environmental quality, such as open space and the University's history and character.

Fleet

Facilities Management committed to reducing the use of petroleum to power its vehicle fleet, currently moving from gas to diesel and from diesel to low-sulphur diesel (2006). There is a pilot purchase underway for electric vehicles for maintenance forces, and we are investigating the use of bio-diesel for various campus equipment and transit vehicles (2007).

Recycling

The University's recycling program has recovered almost 5500 tons of material since 1991 (the estimated total for 2006 is 1055.3 tons.) The program targets white office paper, mixed paper, cardboard, aluminum and steel cans, and glass and plastic bottles, though the campus also recycles cooking oil, automotive oil and oil filters, antifreeze, tires, automotive batteries, scrap metal, pallets, yard waste, toner cartridges, and so on. In addition, the fluorescent lamp recycling program is expanding rapidly. Lamp recycling reduces the amounts of mercury released into the environment.

Starting in January 2006, the University began relabeling existing aluminum can recycling bins to accept both cans and bottles. By collecting commingled cans and bottles (including all types of plastic bottles, glass bottles, aluminum, and steel cans), the University has increased customer convenience and achieved better utilization. The amount of plastic bottles collected has tripled, with fewer containers needed.

Recycling facilities were recently expanded to accommodate additional balers, funded by grant resources. Baling plastic has doubled the amount of revenue generated from plastic bottles, with the added benefit that the recycling broker will now pick up the material from the recycling facility, which saves transportation costs.

Recycling containers now are almost always placed inside buildings. Facilities Management is currently looking to expand its recycling program to encompass exterior areas as well, by placing paired and contrasting-color refuse and recycling containers along campus walks and in plazas and green spaces. We are also collaborating with campus auxiliaries to provide recycling in their facilities and with the athletics departments to provide recycling containers for events.

Custodial

Facilities Management custodial staff has reduced the number of cleaning materials used on campus from 54 to 14 since 2004. In the next year, standard cleaning chemicals will be replaced with effective, green cleaning materials where possible.

Environmental Health and Safety

A Pollution Prevention Study (PPS) was conducted in 2006. This study looked at all areas of campus and suggested means to mitigate the impacts of laboratories, research spaces, labor shops, and other potentially hazardous or polluting areas. The PPS also recommended expanding recycling opportunities (paint cans, sawdust, etc.), better publicizing recycling policies, and looking at purchasing opportunities (such as recyclable carpeting.) FAMA is implementing the suggestions of the study (2006 - 2007).

In addition, Facilities Management will purchase and implement the Environmental Health and Safety Assistant, a computer software program that will help the Office of Environmental Health and Safety track hazardous waste generation and toxic and radiological substance use on the campus, as well as track training and compliance with state and federal regulatory requirements applicable to environmental health and safety.