

March, 2008

**Environmental/Sustainability Activities
The University of Tennessee, Knoxville Campus**

Over the past five years The University of Tennessee, Knoxville campus has taken large strides to “green” campus operations. These strides have been recognized on the local, regional, and national level. The University has served as a model and educator for campuses throughout the state and nation. This role is evident in the university’s recognition in the *National Wildlife Federation’s recent document Higher Education in a Warming World: The Business Case for Climate Leadership on Campus*. The University of Tennessee is the only school in the state and one of only three in the Southeastern Conference to be recognized in this document.

Currently the Student Environmental Initiatives Fee and Campus Environmental Stewardship fund provide the only consistent source of funding for energy conservation upgrades and general environmental projects on campus. A few other projects have been funded by other means, in addition to lighting and other systems that are improved through funding for general renovation projects. Although the Campus Environmental Stewardship Fund has been established as an important method for the generation of energy project funding, contributions to this fund remain small.

Energy costs for the university are funded by the State. Several years ago, the State changed the procedure for funding utilities. Instead of basing the funding on prior year’s actual energy costs, funding is now based on formula calculated on a cost per square foot basis. In theory, if the campus spends less than the state-funded cost per square foot, the balance is earmarked for utility conservation projects in the following year. In practice THEC does establish a cost per square foot each year but, like other formula funding, the State only funds 60-65% of this formula with the campus responsible for the remainder.

Another potential source of funding for energy projects is for the campus to earmark any savings compared to the utilities formula, or simply the utilities budget, to be rolled into the following year for utilities savings projects. Seed funding will likely be needed to initiate this process, but the result will reduce the utilities budget from that time forward.

Student Environmental Facilities Fee

In the spring of 2004 a referendum on the Student Government Association election ballot for purchase of green energy was passed by student voters. This referendum called for an \$8 student fee to purchase green power and fund energy conservation and onsite generation projects on campus. During the summer of 2004 meeting of the Board of Trustees the Student Environmental

Initiatives Fee was approved, designating a charge of \$5 for in-state students each semester. The funding from this fee is allocated in the same manner as other student fees including the Technology Fee and Campus Beautification Fee.

Student Environmental Initiatives Fee 2007-2008 Projects

- Green Power Purchase- The Student Environmental Initiatives Fee funded the purchase of 3,375 blocks of green power from the TVA/KUB Green Power Switch Program. The 3,375 blocks or 506,250 KWh/month purchase offsets approximately 382 tons of CO₂, SO₂, and NO_x each month. This is the equivalent of removing 732 cars from the road each year. UT's green power consists of 2.5% of campus annual electricity use making it a member of the EPA Green Power Partner program (<http://www.epa.gov/greenpower/>)
- Communications Studio Lighting Upgrade- The UT Video and Photography Center (VPC) is a complete broadcast production facility with a full-size television studio, field production capabilities, and editing facilities. The television studio is used daily for both teaching and video production. The Student Environmental Initiatives Fee funded the \$70,000 replacement of the existing television studio incandescent lighting configuration with fluorescent lighting. This change will result in the following outcomes:
 1. Energy savings (power) of 20% – 40% annually – fluorescent lamps require less of a load than incandescent.
 2. Energy savings (hvac) of 20% – 40% annually - fluorescent lamps produce less heat, and as a result less demand for energy to cool the studio.
 3. Labor/cost savings – fluorescent lamps do not need to be changed as frequently as incandescent lamps, reductions in purchases and maintenance costs.
 4. Improved image quality – fluorescent lamps produce a soft, but distinct light source which results in a more enhanced video image, and better quality broadcast product.

VPC is also using this project as an opportunity to provide environmental & energy savings education and awareness to students, faculty and staff by producing a 30-second Public Service Announcement focusing on how the conversion resulted in energy and cost savings and creating a poster that will be displayed outside the entrance to the studio explaining the conversion and the resulting energy and cost saving. The PSA will on air on UTTV (Campus and Comcast cable).

- Stokely Management Center Lighting and Lighting Controls Upgrade Phase III- Student Environmental Initiatives Fee has funded five years at

\$125,000 per year to perform a lighting upgrade in Stokely Management Center. The original lighting in SMC resulted in lighting control on half floors only. Therefore if one person was in their office, all lights for half of one floor had to be turned on for this person to have the lights on in their one office. In addition, the lighting in SMC is 1970s vintage lighting, and is considerable less efficient than current lighting. This project will replace all lighting in the building with current lighting that will also have the capability to be controlled on a per light fixture basis and will incorporate occupancy sensors and daylight harvesting. The Facilities Services Department is donating labor for environmental initiatives projects which should result in this project costing less than the proposed \$625,000.

- Steam Valve Controls- The Student Environmental Initiatives Fee is funding \$13,000 per year for five years to perform upgrades of controls and valves that turn steam on and off in certain buildings. These controls will help eliminate situations where windows are opened and air conditioners have to run to offset overheating of buildings. This will also improve the comfort level in the buildings. These are being installed at Earth and Planetary Sciences, Perkins Hall, Hess Hall, and at Facilities Services. The Facilities Services Department is donating labor for environmental initiatives projects which should result in this project costing less than the proposed \$65,000.
- Graduate Assistantships- Brandi Ruth and Gene Jarvis are graduate assistants with the Make Orange Green program. Brandi Ruth, a master's student in the College of Engineering is working on inputting data into the EPA's Energy Star tool, searching for leaks in steam lines, assessing buildings for energy upgrades, and updating the Clean Air Cool Planet carbon footprint tool. Gene Jarvis, a Ph.D. candidate in the Department of Sociology is focused on educational initiatives related to the Make Orange Green program. His activities include tabling for various events, gathering information, and inputting data.
- Electric Vehicle Purchase- The Student Environmental Initiatives Fee funded the purchase of four electric fleet vehicle during the 2007-2008 fiscal year increasing the total number of campus electric vehicles to nine.
- AASHE Membership- The Student Environmental Initiatives Fee has paid membership dues for The University of Tennessee to join the Association for the Advancement of Sustainability in Higher Education (AASHE). The www.aashe.org website hosts a wide range of information regarding sustainability on college and university campuses. Any person with a @utk.edu or @tennessee.edu email address can access AASHE resources by creating a password.

- Compact Fluorescent Light Bulb Exchange- In the fall of 2007 the Student Environmental Initiatives Fee, University Housing, and Facilities Services, purchased compact fluorescent light bulbs for the annual residence hall exchange. Students living in on-campus Housing facilities swapped incandescent bulbs for energy efficient compact fluorescent bulbs. More than 1,300 light bulbs were swapped in campus residence halls. By using compact fluorescent rather than incandescent light bulbs residence halls will see a \$3,250/semester savings in electrical costs and the elimination of almost 100,000 pounds of emissions savings each semester.
- Electronics Recycling- At the end of the spring semester the Spring Cleaning program, facilitated by UT Recycles, collects items that students leave behind when moving out of the residence halls. Over past two years the Student Environmental Initiatives Fee has recycled more than 10,000 lbs of electronics that would have been disposed of in the trash. During the 2008 spring semester this material will again be collected and associated recycling costs will be funded through the fee.
- Make Orange Green Education and Support- The Student Environmental Initiatives Fee funds the production of Make Orange Green promotional and education products. This includes the hanging of Make Orange Green banners during the fall roll-out week and in the spring, the printing of Make Orange Green t-shirts and pens, and various other items. Also included in education and support are the printing of table tents for campus dining areas, door hangers for academic and administrative buildings, recycling awareness posters and environmental tip posters.

Environmental Stewardship Fund

Created in 2005, the Campus Environmental Stewardship Fund encourages and enables faculty, staff, and other friend's of the university to aid making the Knoxville campus an outstanding example of environmental leadership. The money in the fund will be used in projects and initiatives throughout campus, closely matching the use of the Student Environmental Initiatives Fee. Some uses for the money may include purchasing Green Power, purchasing hybrid and alternative fuel vehicles, and installing energy-efficient heating and lighting systems, as well as promoting energy conservation on campus.

UT faculty and staff can contribute to the fund directly from each paycheck. Gifts will be used for the efforts described above and more to help UT make continuing strides to reduce energy usage and pollution while increasing environmental awareness on campus.

Facilities Services Department

The Facilities Services Department is committed to campus environmental efforts through energy and water conservation, recycling, and education. During routine repairs and replacements of lighting and plumbing fixtures the most efficient fixtures are consistently used. Additionally, free motion sensors for individual offices are provided free of charge and can be requested online.

The Facilities Services Department has undertaken several conservation projects to decrease campus energy usage. Two of many examples include upgrades in Stokely Management Center and Hodges Library. In Stokely Management Center old pneumatic controls for the air handlers were converted to direct digital controls (DDC). The DDC system gives more precise control and improves energy savings by providing better control of systems during unoccupied periods. Systems actually cycle off in the evenings and on weekends. A large scale lighting upgrade in Hodges Library, inspired by Ken Wise, is also underway. The Facilities Services Department is beginning the task of retrofitting all building lighting. Magnetic ballasts are being replaced with electronic ballasts and fluorescent light fixtures are being upgraded from T12s to T8s. The estimated payback for this upgrade through the savings provided by reduced energy use is seven years.

Although many upgrades are being implemented, funding is needed for substantial systems upgrades across campus. These include projects such as improved controls on all applicable HVAC systems campus-wide and the installation of controls to increase water return temperature on chillers. A steam trap maintenance program would also increase steam heating efficiency but the implementation of such a program requires additional labor in the form of a permanent crew.

Green Seal GS-42 Green Cleaning Certification

The University of Tennessee, Knoxville is the nation's first university certified for its green cleaning practices. The certification, granted by the Green Seal organization certifies UT's efforts to make the work of campus cleaning an environmentally friendly process. Green cleaning is a comprehensive approach in which practices affect every part of the cleaning process, from how employees are trained to the types of cleaning chemicals used. The certification -- known as GS-42 -- applies to the seven buildings on the UT campus that are cleaned by UT personnel. In addition to the green cleaning certification for these buildings, UT has worked with contract cleaners in other campus buildings to use Green Seal-certified materials in the cleaning process.

UT began using green cleaning products in academic and administrative buildings in the summer of 2006. The certification process is highly detailed, requiring UT to document its processes and materials. In addition, an auditor from Green Seal visited UT in October to verify the university's work. The

certification requires that UT conduct extensive planning to make the cleaning process more efficient, including communication with clients and effective equipment maintenance. In addition, the certification requires that all products used in the cleaning process be environmentally friendly.

Signing of the Presidents Climate Commitment and the Talloires Declaration

Chancellor Crabtree signed the Talloires Declaration and the American College and University Presidents' Climate Commitment in the fall of 2007. Each document lays out environmental goals and principles for higher education institutions.

The American College and University Presidents' Climate Commitment is an effort by leaders in higher education nationwide to address global warming by reducing institutions' impact on the climate. The goal is to make UT "climate neutral," meaning that the university will have no net negative effect on the global climate. The document has three major steps. First, universities are required to take two immediate, tangible actions. These initiatives, already in place, include the participation of UT in the national RecycleMania competition and the subsidization of public transportation for UT students. The second step is the completion of a carbon inventory. Leslie Chinery, an honors student with the environmental studies program, completed 90% of this inventory as a senior honors thesis. The remaining 10% will be completed by a graduate assistant in the Facilities Services Department for submission in September of 2008. The final step is for the university to create a plan for going "carbon neutral." This plan is due in September of 2009. The plan, created by the university, will include a target date for achieving climate neutrality.

The Talloires Declaration is a broad statement by higher education leaders around the world in support of 10 key environmental principles. These range from a commitment to sustainable campus practices to placing a priority on environmental education as part of the curriculum.

Campus Green Building Policy

In September of 2007 Chancellor Crabtree announced the campus green building policy. The policy, the first of its kind at a college or university in the state of Tennessee, requires new campus buildings and major renovations to conform to LEED standards. LEED, which stands for Leadership in Energy and Environmental Design, is a program administered by the U.S. Green Building Council to create a set of standards for environmentally friendly construction. The standards ensure that a building is significantly more energy- and water- efficient than a typical building, as well as using less harmful techniques in construction. All new buildings constructed on the UT campus at a cost of more than \$5 million and any major renovations would be required to follow LEED standards under

the policy. In addition to their environmental impact, a number of case studies have shown that LEED-certified buildings lead to significant cost savings due to reduced energy and water consumption over the lifetime of the building.

Make Orange Green

In the fall of 2006 UT rolled out the Make Orange Green campus wide environmental campaign. Make Orange Green is a comprehensive program that promotes and coordinates environmental stewardship activities at the University of Tennessee, Knoxville campus. The idea for the program originated in the Office of Public Relations and builds off years of environmental programming by the university. Make Orange Green is a collaborative effort among the Committee on the Campus Environment, the Facilities Services Department, the Office of Public Relations, and the Student Environmental Initiatives Committee. The goal of Make Orange Green is to promote on the positive steps that the University is taking in campus greening and provide information on how all members of the university community can Make Orange Green.

A key facet of Make Orange Green is the <http://environment.utk.edu> website. This site serves as a central point for all campus environmental information. Current events, campus environmental projects, and ways to Make Orange Green can all be found on this site. The Office of Public Relations also developed a logo, central to this site, which can be found on campus environmental projects from biodiesel vehicles to light switch covers that remind people to “flip it off.”

The University of Tennessee has a good working relationship with both Keep Knoxville Beautiful and Keep Tennessee Beautiful. Another facet of the Make Orange Green program is the campus promotion of the statewide Stop Litter campaign. Studies have shown that the people most likely to litter are in the high school and college demographic. To build on the momentum of the state campaign Make Orange Green has coordinated the airing of the Stop Litter public service announcements on the campus radio station, The Rock 90.3, and the campus cable television station The Vol Channel. The spots on the Vol Channel played six times each day for 2 months and the programming reaches 7,500 students. Additionally, the Stop Litter slogan was printed on of all special event trash boxes used at home football games.

The university plays an important role in the community, the region, and the State. This role creates a responsibility for the university to be a good environmental citizen. With the Make Orange Green program the University is working to teach tomorrow’s leaders today about today’s environmental issues. For more information please visit <http://environment.utk.edu>

Committee on the Campus Environment

The Committee on the Campus Environment was organized as a standing committee at the University of Tennessee, Knoxville (UTK) in August 1999. Its mission is to advise the Administration on institutional policies and behaviors that promote environmental stewardship at UTK. As a Research I university, UTK has both the qualifications and the responsibility to demonstrate leadership as a "living laboratory" for environmental stewardship.

To fulfill its mission, the Committee will provide advice on ways to:

1. Improve the physical environment of UTK;
2. Incorporate environmentally sustainable principles into design, construction, operation, and maintenance decisions and practices at UTK; and
3. Increase the day-to-day environmental awareness and knowledge of students, faculty, and staff at UTK.

In this context, the term "UTK campus" includes the agricultural as well as the main campus, and the term "physical environment" includes the built as well as the natural environment. The committee will include as part of its deliberations the relationship of UTK to the larger physical community in which it is situated.

Members of the Committee are appointed by the Chancellor. To aid its deliberations, the Committee may on its own initiative form task forces and work groups, whose members may include--in addition to Committee members--other students, faculty, and staff at UTK as well as non-UTK members. All recommendations to the Administration are made by the Committee