

**Ethical Energy Use at Gulf Park:
Some Suggestions for Greater Sustainability**
(An Essay by Tiffany Morris, w/Chelcie Smith)

Since the discovery of fire, humans have been searching for new ways to utilize natural resources to improve our quality of life. We have created air conditioners and heaters. We have harnessed electricity in a glass bulb so that we do not have to live in darkness. We have even developed a plumbing system to maximize comfort while using the restroom. All of these technological advances are so beneficial to our everyday lives that they seem impossible to live without.

But what happens when our water, air and climate are overwhelmed by the impacts of mass produced electricity, air conditioners, and plumbing? Clearly, we deplete our planet's nonrenewable resources, and inflict devastating damage from fossil fuels. Yet our culture makes it inconceivable for a developed nation to do without plumbing, electricity, and heat/air. The middle path is to adopt sustainability practices to limit our use of nonrenewable resources. After all, as the adage goes, "with great power comes great responsibility" and it is our responsibility to care for our planet. One way that we can take this global concept and apply it locally is by making sustainable changes at our University of Southern Mississippi Gulf Park Campus, which will benefit both the environment and the budget by shrinking our carbon footprint while reducing power consumption.

Colleges all over the United States have implemented plans to remake themselves as green institutions. In particular, many colleges have taken a closer look at their energy consumption. According to a chart supplied by USM's physical plant, The University of Southern Mississippi's Gulf Park campus used 5,167,730 kWh of electricity from July 1, 2013 to June 30, 2014. Most of the excess energy consumption on a college campus stems from: 1.) light bulbs that are not energy efficient; 2.) unnecessary lighting; 3.) leaving office equipment running when not in use; 4.) the misuse of heating and cooling. For a college

campus, such as The University of Southern Mississippi's Gulf Park campus, to become green and efficient, energy consumption from lighting, office equipment, and heating and cooling must be reduced.

The lowest hanging fruit of any energy reduction plan is lighting. To reduce energy consumption through light bulbs, college campuses need to substitute either compact fluorescent light bulbs (CFL), or light emitting diode bulbs (LED) for the incandescent bulbs currently in use. Compact fluorescent light bulbs (CFL) are a marked improvement on incandescent light bulbs. According to Colgate University, CFL "use 75% less energy than incandescent light bulbs and last up to 10 times longer" ("Tips for Living Sustainably"). Because they consume less power, CFL reduce carbon dioxide emissions from power plants. A single 20 watt CFL used in place of a 75 Watt incandescent will save over 550 kilowatt hours over its lifetime (California Energy Commission). These energy savings translate into 500 pounds of coal not burned and 1300 pounds of CO₂ emissions avoided. (California Energy Commission). Colgate University is not the only college to find compact fluorescent lighting helpful in reducing energy consumption.

Columbia University "has been replacing incandescent lighting with more efficient, longer-lasting fluorescent bulbs...for about 15 years" ("Energy Efficiency"). Stanford University has also pledged to use compact fluorescent lighting in its facilities. Committing to what was once the Green Lights Program, Stanford has "replaced over 90 percent of its fixtures in academic, residential, and administrative buildings on campus in only 4 years" ("Energy Retrofit Program"). The University of Vermont is yet another college where "incandescent lights are no longer installed on campus" ("Energy Efficiency Projects"). Many college campuses have opted to use LED lighting as well. This option is sometimes preferred because "the operating life of a light emitting diode (LED) is unaffected by turning it on and off" ("When to Turn Off Your Lights"). Boston University has effected "over 8,000 LED replacements" in the past 10 years ("Energy"). The new light bulbs at Boston University save to "over 2.4 million kWh

of savings annually” (“Energy”).

Stanford University and the University of Vermont both use LED light bulbs for every exit sign on campus. Stanford has come to realize that “this simple conversion reduces electricity consumption by up to 50 watts, which is worth about \$48 per year, per sign” (“Energy Retrofit Program”). The University of Vermont has implemented LED lighting on “a total of 3000 signs on campus,” and “the new 2 watt LED signs are providing a significant energy savings” (“Energy Efficiency Projects”). Although changing the type of light bulbs used can decrease the amount of energy consumed, there are devices that can be paired with lighting to save even more.

Along with power use reductions from compact fluorescent lighting and LEDs, dimmers and lighting sensors provide a college campus with the ability to turn off unneeded lights. Many college campuses have implemented voluntary energy guidelines that include lighting. The University of Vermont’s guidelines state that students and personnel should take on the responsibility of “shutting off the lights when leaving a room” (“UVM Energy Guidelines”). Colgate University also recommends turning off lights when rooms are empty because “a large percentage of the charges on electric bills are from unnecessarily lighting rooms” (“Tips for Living Sustainably”).

Oklahoma State University’s campus now has a green theme: “Lights Off in Unoccupied Areas” (“Energy Management Program”). OSU students and staff are reminded to “refrain from turning lights on unless definitely needed” because “lights not only consume electricity, but also give off heat that places an additional load on the air conditioning equipment and thereby increases the use of electricity necessary to cool the room” (“Energy Management Program”). Cornell University states that “the university could save up to \$60,000 per year by simply turning off lights that are not in use” (“Lights Off Cornell”). The Lights Off Cornell initiative “sends student volunteers to buildings across the campus to turn off lights”. Voluntary energy guidelines, however, can only go so far. When a campus decides that voluntary

compliance to “lights out” policies is not green enough, this is where dimmers and sensors come into play.

Dimmers are useful because they “are inexpensive and provide some energy savings when lights are used at a reduced level” (“Lighting Controls”). Dimmers can be used with both compact fluorescent lighting and LED lighting. Compact fluorescent light bulbs are great when paired with a dimmer because they “do not lose their efficiency with dimming” (“Lighting Controls”). Although compact fluorescent light bulbs are commonly used with dimmers, “fully compatible LED dimmers are expected to become more common as the LED industry expands” (“Lighting Controls”). Although dimmers create some energy savings, sensors can reduce energy consumption even more.

An occupancy sensor is a tremendous help when regulating the use of lighting. This is accomplished by “turning lights on automatically when someone enters a room, and save(s) energy by turning lights off soon after the last occupant has left the room” (“Lighting Controls”). Several universities across the United States have implemented sensors. Appalachian State University has “motion sensors in public areas” (“Efficiency Buildings and LEED Design”). Most of this university’s lighting has been upgraded. In fact, “almost 85 percent of campus lighting has been retrofitted with energy saving LED fixtures or with either a light sensing or timer-based automatic shutoff feature” (ASU News). The University of Maryland uses “over 200 occupancy sensors in general purpose classrooms across campus, helping to minimize lighting levels when not in use”. Boston University uses a different type of sensor known as “daylight responsive lighting control”. These controls “are photosensors that assess the amount and quality of natural daylight in a particular space,” thus reducing lights in a room when natural light can be used (“Energy”). Columbia University also uses a type of sensor that contains a timer to “prevent lights from being left on overnight . . . usually programmed for 10-to-12 hour control settings” (“Energy Efficiency”). If the University of Southern Mississippi’s Gulf Park campus can consider these types of retrofitting, it would be well on its way to becoming a green campus.

Similar to lighting retrofits, energy monitoring of office equipment can help a campus turn over a new leaf. As with lights, office equipment, such as computers and printers, is often left on and unattended. To address this, a policy at Oklahoma State University states that “all office machines (copy machines, laminating equipment, etc.) shall be switched off each night and during unoccupied times” and “all computers should be turned off each night” (“Energy Management Program”). Furthermore, Oklahoma State University has implemented the policy that “all capable PC’s should be programmed for the “energy saver” mode” or sleep mode, which is enabled after ten minutes of being unattended (“Energy Management Program”). The University of Vermont has joined in on the implementation of a sleep mode system by “sponsoring a program to install the Sleep Mode software on university and personal computers on campus” (“Energy Efficiency Projects”). This program is capable of saving energy because it “automatically turns off a monitor, which significantly lowers the energy use of a PC” (“Energy Efficiency Projects”). Ultimately, the savings from this practice could be huge, resulting in a reduction of “1.6 million kWh per year” from office equipment alone (“Energy Efficiency Projects”). Colgate University pushes their implementation a step further by recommending the use of a Smart Strip. Colgate University explains that “Smart Strips can put an end to phantom load” (“Tips for Living Sustainably”). Phantom load occurs when a device uses energy even after it is turned off. Phantom load “is responsible for 40%” of electricity usage (“Tips for Living Sustainably”). These recommendations can be helpful to a college, such as Southern Miss’s Gulf Park campus, desiring to reduce its energy consumption.

Heating and cooling practices offer another opportunity for becoming a green campus. These changes can include programmable thermostats, window retrofitting, the use of natural lighting, and even central campus controls. Different thermostat recommendations suit both the winter and the summer. For instance, in the winter, energy can be saved “by setting the thermostat to 68°F” (“Thermostats”). In the summer, energy can be saved by “lowering the thermostat setting to 78°F” (“Thermostats”). Oklahoma State University implements a

similar system during these seasons. When air conditioning is necessary, the university states that “temperature settings shall NOT be set below 74°F” (“Energy Management Program”). When heating is necessary, “temperature settings shall NOT be above 72°F” (“Energy Management Program”). These rules only apply to occupied areas. According to the rule, “the unoccupied time shall begin when the students, faculty or staff leave an area” (“Energy Management Program”). In order to maintain temperatures such as these, a programmable thermostat may be deemed necessary. The great thing about programmable thermostats is that they “can store multiple daily settings,” for both occupied and unoccupied times (“Tips: Programmable Thermostats”). Furthermore, programmable thermostats can be used for setbacks.

With thermostat setbacks, campuses have the option to “save energy by turning down heating and cooling systems while buildings are not in use” (“Energy Efficiency Projects”). Vanderbilt University implements “night temperature setbacks” when buildings are not occupied, and in 2003, the University of Vermont became “retrofitted with programmable thermostats” (“VU Main Campus”, “Energy Efficiency Projects”). The University of Vermont goes the extra mile by implementing centralized building controls. Not only is each room making use of programmable thermostats, but “buildings are tied into a centralized control system at the campus heating plant” (“Energy Efficiency Projects”). This program “is migrating to an ethernet backbone for control, and eventually it will be able to be viewed from anywhere, not just at the plant” (“Energy Efficiency Projects”).

This is quite the step up for Vermont. In addition to thermostat changes, some universities have taken a second look at their windows. For example, Stanford University uses window film, which can “reduce energy costs by minimizing the amount of heat entering a building through sunlight, thereby decreasing the amount of air-conditioning needed to cool the building” (“Energy Retrofit Program”). Stanford’s window film is effective because it “reflects most ultraviolet and infrared light while allowing visible light to pass through, effectively reducing the heat transmittance by over half” (“Energy Retrofit Program”).

Similarly, the University of Maryland uses “shading devices and specialty glass that reduces solar heat and glare” (The University of Maryland).

The University of Vermont has installed “storm windows, insulation and weather-stripping” to assist with the reduction of energy consumption (“UVM Energy Guidelines”). This university also maintains that “windows and doors should be kept closed during the heating season and during the summer in those areas that have mechanical cooling” (“UVM Energy Guidelines”). When all else fails, colleges should do exactly what Oklahoma State University recommends: “Utilize natural lighting where appropriate” to warm rooms (“Energy Management Program”).

To reduce energy consumption on a college campus, the administration must reexamine all its practices for lighting, office equipment, and heating and cooling. The schools mentioned have implemented plans and have seen savings. The University of Maryland has a goal to “reduce electricity use on campus by 20% by 2020 via energy efficiency upgrades” (Loh). Vanderbilt University has “saved 12,513,500 kwh” in just a few short years (“VU Main Campus”). With its energy plan, Boston University plans to “reduce energy consumption by 10%” (“Energy”). While The University of Southern Mississippi’s Hattiesburg campus has a plan in place to “implement energy-saving strategies including time clocks, programmable thermostats and lighting controls,” the Gulf Park campus still has room to improve (“Carbon Footprint”). With a bit of hope and determination, the Gulf Park campus has the potential to become a green campus, reducing costs and creating a better future for students, faculty, staff and the wider community.

Works Cited

ASU News. “Appalachian Named One of America’s Top 20 “Coolest” Schools by *Sierra Magazine*.” University News: Appalachian State University. Appalachian State University, 17 Aug. 2011. Web.

- “Campus Infrastructure and Operations: Energy.” University of Maryland. University of Maryland, 2010. Web.
- “Carbon Footprint.” The University of Southern Mississippi: The Office of Sustainability. The University of Southern Mississippi, 2014. Web. <<http://www.usm.edu/green/carbon-footprint>>.
- “Efficiency Buildings and LEED Design.” Sustain Appalachian. Appalachian State University, 2014. Web.
- “Energy.” Sustainability @ BU. Boston University. Web. <<http://www.bu.edu/sustainability/what-were-doing/energy/>>.
- “Energy Efficiency.” Columbia University Facilities. Columbia University, 2014. Web.
- “Energy Efficiency Projects.” The University of Vermont: Energy Management. The University of Vermont, 1 Jan. 2014. Web.
- “Energy Management Program.” Oklahoma State University. Oklahoma State University, 2014. Web. <<http://energy.okstate.edu/>>.
- “Energy Retrofit Program.” Stanford: Sustainability and Energy Management. Stanford University. Web.
- “Incandescent, LED, Florescent and Halogen Bulbs”. California Energy Commission, 2017. Web.
- “Lighting Controls.” Energy.gov. U.S. Department of Energy, 29 July 2012. Web.
- “Lights Off Cornell.” Cornell University: Sustainable Campus. Cornell University. Web.
- Loh, Wallace D. “President’s Energy Initiatives.” University of Maryland. University of Maryland, 22 Apr. 2014. Web.

“Tips for Living Sustainably.” Colgate University, 2014. Web.

“Tips: Programmable Thermostats.” Energy.gov. U.S. Department of Energy, 27 July 2014. Web.

“Thermostats.” Energy.gov. U.S. Department of Energy, 6 Nov. 2014. Web.

The University of Maryland. Campus Sustainability Report 2010. U of Maryland, 2010. Web.

“UVM Energy Guidelines.” The University of Vermont: Energy Management. The University of Vermont, 2014. Web. .

“VU Main Campus Energy Efficiency and Conservation Accomplishments.” Sustain VU. Vanderbilt University, 1 Jan. 2014. Web.

“What Is LEED?” *USGBC.org*. n.d. Web. 05 Dec. 2016.

“When to Turn Off Your Lights.” Energy.gov. U.S. Department of Energy, 30 Aug. 2012. Web.

