THE UNIVERSITY OF TENNESSEE KNOXVILLE

Environmental Progress Report

June 2016

To Chancellor Jimmy G. Cheek and
Vice Chancellor for Finance and Administration Chris Cimino

By the Committee on the Campus Environment

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Contents

Introduction

This Environmental Progress Update Report summarizes environmental stewardship activities implemented at the University of Tennessee, Knoxville since the Committee on the Campus Environment (CCE) published its Environmental Progress Reports in 2005 and 2011 (see Appendix A for a complete listing of campus environmental reports).

The report is divided into five sections, the first of which summarizes notable achievements ("milestones") in UT Knoxville's sustainability efforts since 2005. Section 2 compares the recommendations of the 2005 and 2011 reports with what has actually been accomplished since their publications. Section 3 presents a history of accomplishments from the previous report recommendations that are not necessary milestones but achievements nonetheless. Section 4 updates data for the ten indicators of environmental progress that were used in the 2011 report and adds three new indicators: student involvement, greenhouse gas emissions and development efforts for sustainability initiatives. Section 5 offers new recommendations from CCE, based on the findings in the earlier sections of the report.

1. Milestones in UT Sustainability Initiatives

Student Environmental Initiatives Facilities Fee (2005)
In the fall 2005, by request of student vote during SGA elections, the Student Environmental Initiatives Facilities Fee was established funding for campus sustainability initiatives. Among other things, the environmental portion of the fee has generated funding to reduce water consumption in campus facilities, fund student energy conferences, purchase hybrid electric and all-electric vehicles for use on campus, purchase recycling bins for student rooms and faculty/staff offices, fund two Make Orange Green graduate assistants, and provide materials for awareness education (see Appendix B for a full list of projects supported by the Student Environmental Initiatives Facilities Fee). The Student Environmental Initiatives Committee, which is comprised of faculty, staff and students, meets as needed to recommend how to allocate funds generated for campus sustainability projects by the Student Environmental Initiatives Facilities Fee.

One notable sustainability project funded through the Student Environmental Initiatives Facilities Fee is a complete lighting retrofit at Stokely Management Center. Prior to the retrofit, the older inefficient lighting fixtures could only be turned on and off one half of one floor at a time. With labor donated by the UT Knoxville Facilities Services, the project funded the purchase of new lighting fixtures and controls that use about one-third less electricity and eliminate the need for excessive lighting in the building. In addition, the funding added daylight harvesting technology to the building so that the lighting dims as sunlight shines enters a space. Based on 2003 electric rates, these improvements are estimated to save approximately $56,000 per year.

Campus Environmental Stewardship Fund (2005)
Created at the request of the Committee on the Campus Environment, the Campus Environmental Stewardship Fund encourages and enables anyone from the community to donate money to UT Knoxville sustainability initiatives. The fund is intended to support and advance projects similar to those backed by the Student Environmental Initiatives Facilities Fee.

Green Power Purchase (2005)
Since its inception, the environmental portion of the Student Environmental Initiatives Facilities Fee has been used to support the purchase of "green" power. The fee funded the purchase of 5,000 blocks of certified Green-e® renewable energy certificates (RECs) through the TVA/KUB Green Power Switch Program. The 5,000 blocks or 750,000 kWh/month-purchase offsets approximately 367 metric tons of carbon dioxide equivalent (MTCDE) each month. This is the equivalent of removing 864 cars from the road each year[1]. The purchase is also equivalent to 3.6% of campus' annual purchased electricity, making UT Knoxville a member of the EPA Green Power Partner Program.

[1] Source: USEPA Greenhouse Gas Equivalencies Calculator. Accessed May 9, 2016 from https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.

Update: REC Restructuring (2016)
The purchasing process of the Student Environmental Initiatives Fee was reevaluated and national, regional and local RECs rates were considered. With the change in the market since 2005, REC rates greatly decreased and thus more RECs could be purchased at a lower price. The 2016 fiscal year will end with 225,818 megawatts RECs purchased, offsetting 85% of the university's energy use. Once the restructuring process is complete by October 2016, the University of Tennessee will have be able to claim 100% of its power as green, the first to do so in the SEC. This rate restructuring process will also save the Student Environmental Initiatives Facilities Fee $96,000 per FY (based on traditional spending amount of $250,000/FY over the past five years) and bring UT from #10 in the nation for green power use to #1 in the nation.

Make Orange Green (2006)
Make Orange Green, the Knoxville campus' environmental sustainability initiative, was launched during fall 2006. A collaborative effort between the Committee on the Campus Environment, Facilities Services (specifically the Office of Sustainability), and the Office of Communications and Marketing, Make Orange Green projects and programs are intended to reduce the university's environmental impact while building a culture of sustainability among faculty, staff, students and campus visitors. See http://environment.utk.edu/.

Sustainable Building Policy (2007)
UT Knoxville adopted a Sustainable Building Policy in September 2007. The policy establishes the United States Green Building Council's Leadership in Energy and Environmental Design (LEED™) as the standard for Knoxville campus construction and renovation projects costing more than $5 million. For all such projects, design and construction shall be designed to meet the minimum requirements of LEED for New Construction and Major Renovations (LEED-NC). In addition, small scale renovations shall utilize the LEED for Commercial Interiors (LEED-CI) rating system as applicable.

Presidents' Climate Commitment/Climate Action Plan (2007)
In fall 2007, Chancellor Crabtree signed the American College and University Presidents' Climate Commitment (ACUPCC). The ACUPCC is an effort by higher education leaders nationwide to reduce their institutions' impact on global climate change and integrate sustainability and climate change into the curriculum.

As part of the ACUPCC, UT Knoxville must conduct a greenhouse gas inventory every other year and publicly report total emissions on the Second Nature website, which is a parent company (NGO) of the ACUPCC. With the help of honors student (now UT Knoxville alumnus) Leslie Chinery, the Office of Sustainability completed the first campus greenhouse gas emissions inventory in 2007. The Office has completed additional inventories in 2008, 2009, 2010, 2011, 2012, 2014, 2015 and 2016.

Also, in accordance with the ACUPCC, the campus has adopted a Climate Action Plan. The plan, which was approved by Chancellor Jimmy G. Cheek in January 2010, aims for "climate neutrality", or zero net greenhouse gas emissions, by 2061. The plan is posted at: http://rs.acupcc.org/site_media/uploads/cap/483-cap.pdf

The next step for campus will be to implement the Climate Action Plan and publicly report progress (in terms of greenhouse gas emission reduced or offset, and integration of sustainability and climate change into the curriculum) on the Second Nature website.

Conceptual Energy Plan (2007)
At the request of Chancellor Crabtree, the Committee on the Campus Environment in collaboration with researchers from Oak Ridge National Laboratory created a 25-year Conceptual Energy Plan for UT Knoxville. The plan was partially funded by a $25,000 Renew America grant from the U.S. Department of Energy. It was submitted to Chancellor Crabtree on August 31, 2007. The Energy Plan may be accessed at:
http://www.cce.utk.edu/energyplan/energyplan.pdf

Office of Sustainability (2007)
Established in summer 2007, the Office of Sustainability aims to foster sustainable development and promote environmental stewardship at the University of Tennessee, Knoxville by strategically bridging the gap between campus operations, teaching, research, and outreach. Sustainability Manager Gordie Bennett has directed activities of the Office of Sustainability since fall 2008. Gordie has led efforts to reduce the university's ecological footprint by tracking and reporting campus emissions, developing sustainability outreach materials, and encouraging sustainable campus operations.

Update: (2013) Gordie Bennett has left UTK and Preston Jacobsen replaced Gordie as the Sustainability Manager for campus in November of 2013. Preston has since hired two AmeriCorps members to perform the role of Outreach and Data Analytics, both of which have allowed the sustainability program to grow in both perception and impact.

Switch Your Thinking (2008)
The Switch Your Thinking campaign, initiated by the Chancellor's Office in fall 2008, is an effort to encourage energy conservation practices among UT Knoxville faculty, staff, students and visitors. The campaign calls for these individuals to support Make Orange Green by adopting four simple steps:

- Turning off lights when not in the office for more than one hour.
- Turning off computers when not in the office for more than an hour.
- Using a power strip in the office, and turning it off at the end of each day.
- Turning off window AC units at the end of each day.

To date, Switch Your Thinking has helped the Knoxville campus avoid consuming over $1 million in electricity, while preventing the environmental impacts associated with producing this power. The campaign ended in 2012.

Energy Conservation Policy (2008)
UT Knoxville's Energy Conservation Policy was approved by Interim Chancellor Simek in December 2008. The policy established a host of energy-saving measures, including ENERGY STAR purchasing and indoor air temperature guidelines (68 degrees F for heating; 76 degrees F

for cooling) for all campus buildings. The complete text of the Energy Conservation Policy is available at http://www.pp.utk.edu/policies/Energy%20Conservation%20Policy.pdf.

Campus Composting Program (2010)
UT Recycling, the Knoxville campus recycling program, has launched a food composting program to transform otherwise wasted food into nutrient-rich fertilizer. A pilot program with pre-consumer food waste - unsold or uneaten items, such as leftover bagels and coffee grounds - started in May 2010. The food waste is collected from campus dining locations and taken to a composting site off Cherokee Trail, where it is mixed with wood chips from campus tree trimmings. By early fall 2010, UT Recycling was collecting 1,000-1,200 pounds of food waste per week for composting.

Solar Panel Installations/EV Charging Stations (2010)
Since 2010 the University of Tennessee has installed 17 electric vehicle charging stations. These three solar arrays provide 70,000 kWh of clean electricity every year as well as providing a free service to those who choose to drive an electric vehicle.

Update: (2016) Plans are in order to add more photovoltaic panels on the 11th street garage in addition to the 23 kilowatt installation that currently exist. This will bring our renewable energy generation to an estimated 90,000 kWh per year.

Campus Master Plan (2011)
The draft 2011 Campus Master Plan contains goals and strategies for promoting environmentally friendly forms of transportation, including bicycling and walking. Recommendations included in the current draft include establishing an extensive system of bicycle lanes, paths, and "sharrows" (shared-lane markings). Additionally, the draft emphasizes the need for moving vehicles and parking spaces to the periphery of campus, and it recommends establishing an extensive corridor of green space along what is now Andy Holt Avenue.

State Sustainable Design Guidelines (2011)
The University of Tennessee started to follow the Tennessee State Sustainable Design Guidelines in 2011 as part of their designer manuals as a minimum standard and guideline. These guidelines were produced by the State Building Commissions to insure that the "principles of good sustainable design and construction practices are being implemented on State of Tennessee projects."[2] Most of the recommendations in these guidelines fall in line with the principles of LEED certification requirements. Since the inception of the SDG buildings such as the Student Union and Fred D Brown Residence Hall has followed these recommendations.

Chancellor's Challenge campaign (2011)
One year challenge from the Chancellor's Office to the campus to reduce energy consumption another 10%, in tandem with the SYT campaign, however using a baseline from FY 10 - 11. Started in February 2011 and ended in February 2012. Utilizing mainly email and website

[2] Source: The State of Tennessee Sustainable Design Guidelines Accessed May 9, 2016 from https://tn.gov/assets/entities/generalservices/stream/attachments/080728_State_of_TN_Sustainable_Design_Guidelines_v5.pdf.

updates, the campaign was able to reduce energy consumption by 3.2%, with an avoided total cost of $632,942.This campaign ended in February 2012, however utilizing a "call to action" from the Chancellor's office in tandem with the Office of Sustainability's outreach and data management, has shown to be extremely effective.

POWER Challenge (2011)
The Make Orange Green POWER (Programs of Water, Energy, and Recycling) Challenge is a month long competition that pits UT residence halls against each other in a battle to see which hall can be the greenest. Residence Halls earn points from reducing their water and energy consumption and increasing recycling efforts. They can also gain points from a variety of environmental awareness projects and pledges to become greener. This competition saves the university tens of thousands of dollars every year and teaches students the ease and importance of greening their lifestyle.

State High Performance Building Guidelines (2013)
The State High Performance Building Guidelines were created in 2013 as an extension of the State Sustainable Design Guidelines. While the SDG is LEED-based and new constructed oriented, the HPBr was created to focus on capital maintenance, renovations, and additions. Following these recommendations creates cost-effective, energy efficient, and performance monitoring buildings. UTK started following these guidelines since the inception to make the campus more energy efficient. The complete manual is available at https://www.tbr.edu/facilities/designers-manual.

Green Revolving Fund/Energy Task Force (2013)
The Energy Task Force is a group of Facilities Service employees that identify and evaluate energy projects on campus. These energy projects are funded by the Green Revolving Fund created by the Student Environmental Initiatives Facilities Fee. The "Green Fee" Committee gave the Green Revolving Fund a starting balance of $100,000 in 2013 and additional money was supplemented later. Most of the projects paid for by the fund include retrofit and energy saving projects. The amount of money that is saved through these projects is placed back into the Revolving Fund for up to five years after the installations to be used for additional energy projects. Since the creation of this fund it has saved the university an estimated $208,002. More information on the Green Revolving Fund is available through the Office of Sustainability.

Hiring a Stormwater Coordinator (2014)
The University of Tennessee Knoxville operates a Phase II Municipal Separate Storm Sewer System (MS4) and with that comes the hiring of a Stormwater Coordinator. The primary goal of the Stormwater Coordinator is to improve and/or maintain the quality of surface waters by reducing the amount of pollutants in storm water as a result of continued urbanization. The Stormwater Coordinator developed at Stormwater Management Plan that provides regulatory framework to ensure developments have minimal impact on the environment, promote low impact development to help protect our natural hydrologic cycle, manage our ever growing Stormwater Infrastructure, and engage our community through public participation and education outreach events.

Experience Learning Programs – Student Design/Research Fund (2015)
The Office of Provost announced that Experience Learning would be part of the new Quality Enhancement Plan in 2014. Experiential Learning engages students, help students to better understand their coursework through hands-on opportunities and foster their sense of civic responsibility. It encompasses anything from service-learning to research to study abroad to volunteering. With this announcement, the Green Fee Committee created the Student Research Design Fund to specifically fund students who wanted their Experiential Learning to have an environmental focus. This fund will be dedicated to student design/research projects across all academic departments that will benefit the University of Tennessee (UT), with an emphasis on operational projects to be completed by Facilities Services or an outside firm as needed. This fund is intended to provide monies to design/research applicable sustainability related projects, not the implementation. Project implementation funding will be investigated if the SEIC endorses the findings of the student design/research project, pending the approval of the Facilities Services Fee Oversight Committee.

Steam Plant Conversion (2015)
UT's steam plant was built in 1961 with three coal-fired boilers that provide for building heat, domestic hot water, and lab sterilization. The plant's emission prior to the conversion to natural gas was approximately 90,000 metric tons of carbon dioxide equivalent per year and accounted for 35% of UT's total emissions. UT was able to stop using coal in March 2015 and convert to cleaner burning natural gas. This reduces UT's emissions by 39,000 eCO2. This is equivalent to the energy use of 3,500 homes in a year or removing more than 8,200 passenger vehicles of the road each day.[3]

Zero Waste Gameday Efforts (2015)
UT Recycling in partnership with UT Athletics, Aramark, the Office of Sustainability, and Good Sports Always Recycle work to eliminate at least 90% of waste generated during athletic events through recycling and composting across Big Orange Country. The waste diversion effort, which includes tailgating areas, has reached its highest diversion in 2015 at 75% with drastically increasing rates through the years. The determination and achievement of this program has also been recognized by the Game Day Recycling Challenge. In the 2015 season the University of Tennessee took 1st in the nation for recycling totals, 3rd for the highest recycling total in a single game and 14th for waste diversion rate.

Total 6 LEED Buildings (Ongoing)
The Sustainable Building Policy created in 2007 led to the construction of 6 LEED certified buildings on campus though many more are qualified and without certification. This process started with the renovation of one of the most iconic buildings on campus, Ayres Hall which achieved Silver Certification. The Natalie L. Haslam Music Center, Joint Institute of Advanced Materials, and the Student Health Clinic also have LEED Silver Certification. Min Kao Electrical Engineering and Computer Science and the Joint Institute of Neutron Sciences have the meet LEED standards but have not been certified.

[3] [3] Source: USEPA Greenhouse Gas Equivalencies Calculator. Accessed May 9, 2016 from https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.

Overall Improvement

The past eleven years have certainly brought forth a noticeable change to campus, in a manner that is more supportive of not only our environment but our campus population and surrounding community of Knoxville. Such examples include increased research opportunities, more aesthetically pleasing and natural landscaping, reduction of energy and operation cost over time during a period of unprecedented growth and of course a gradual decline in GHG emissions.

Although we are a leader in the SEC and the Southeast as a whole in many sustainable categories such as engagement, energy and zero waste, much more is required to achieve carbon neutrality by 2061. The remaining forty-five years to achieve such an ambitious goal fits quite well with the culture on campus and in the community, as it's this committee's intention to enhance campus reputation and impact to the environment in a manner that is supportive, not abrasive or fast moving.

The above milestones and the below recommendations assist in our symbiotic approach and in tandem with the Climate Action Plan, we are encouraged moving forward as the past eleven years are a wonderful precursor to the next forty-five years.

2. Recommendations

The original Environmental Progress Report contained an extensive list of recommendations for improving the sustainability of campus operations. The table below describes progress that UT Knoxville has made in implementing these recommendations made in the 2005 and 2011 reports as well as future recommendations for 2016 and beyond. Although these achievements have put the Knoxville campus more solidly on the path toward sustainability, we still have a long way to go.

Categories:

I. Energy consumption in buildings (electricity, coal, natural gas)

II. Air pollution

III. Water and sewer use

IV. Water pollution

V. Solid and hazardous waste

VI. Procurement

VII. Motorized transportation

VIII. "Green" buildings

IX. Landscaping

X. Green spaces; Accommodations for pedestrians and bicycles

XI. Student Involvement

XII. Greenhouse Gas Emissions

XIII. Development Efforts

XIV. Food

Below are the top ten recommendations the Committee on Campus Environment would like to bring to attention and continue to strive for over the next five years. These are pulled from the list of all recommendations found in the General Recommendations listing below the top ten recommendations;

1. Explore the financial and technical feasibility of adding photovoltaic (PV) panels to selected roofs and surface parking areas.
2. Utilize thermal and/or battery storage systems to transfer electricity use away from peak periods.
3. Create an interactive Energy Dashboard within buildings across campus.
4. Sign onto a Power Purchase Agreement for renewable energy.
5. Explore "green roof" technologies.
6. Develop a Zero Waste Policy for all campus operations, including but not limited to Athletics, Dining, Student Organizations, and Community Vendor-Sponsored and Supported Events.
7. Implement a campus-wide ban on Styrofoam products including but not limited to Athletics, Dining, Student Organizations, and Community Vendor-Sponsored and Supported Events.
8. Create a task force on green purchasing that would study current purchasing practices, compare them with the best practices and make recommendations.
9. Develop an alternative transportation task force to identify potential green transportation initiatives and a pathway to fund these initiatives.
10. Fund a greenway reroute project to connect greenway from main campus below Neyland Stadium, to Neyland greenway upstream of G10 parking garage.

General Recommendations

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Establish an "environmental stewardship fund" to support environmental improvements.	Campus Environmental Stewardship Fund established in 2005 (see "Milestones").	Collected $18,751.01 from inception to start of 2016
2005: Make environmental stewardship a selling point when seeking private donations for the University.		
2005: Calculate the "payback" periods of "green" equipment and facility designs with relatively low O&M costs, and factor payback periods into decisions.	Calculations regarding the return on investment, or "pay-back" periods, of "green" equipment and facility designs are being factored into procurement decisions.	

Energy Consumption in Buildings

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Continue use of energy efficient ballasts and lamps in fluorescent fixtures or their components are replaced.	Facilities Services and University Housing use energy-efficient lighting for routine repairs and replacements. Magnetic ballasts are being replaced with electronic ballasts and fluorescent light fixtures are being upgraded from T12s to T8s.	Energy savings strategies such as lamp upgrades to CFL, LED, and electronic ballasts have been accomplished during regularly scheduled maintenance activities with maintenance dollars.
2005: Replace incandescent lighting with fluorescent or more energy-efficient lighting.	UT Recycling and the Office of Sustainability host an annual light bulb exchange in campus residence halls to encourage students to use energy-efficient compact fluorescent light bulbs rather than incandescent bulbs.	
2005: Post "Kill-a-Watt" signs on light switches.	Thousands of "Make Orange Green" switch plates have been distributed on campus to encourage building occupants to conserve energy by switching off overhead lights. Launched the 'Switch Your Thinking' campaign to reduce energy use on campus by 10% in 2010 fiscal year. Also created "Friends of Switchie" conservation program where volunteers shut off department lights and electronics at the end of each day to help the effort. They receive FOS sticker.	

Energy Consumption in Buildings

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Provide incentives to students to save energy in residence halls. In general, start a more concentrated effort on "energy conservation" behavioral training aimed at students, faculty, staff, and the administration.	Launched in 2005, the Make Orange Green POWER Challenge promotes energy conservation and other sustainability best practices among students who live in a campus residence hall. The Challenge encourages friendly competition between the halls to see who can reduce electricity use and water use, while increasing recycling rate, by the most during the month of October. To encourage participation with the competition, weekly prizes are given to Resident Assistants who host programs and other activities that educate students about the importance of environmental stewardship.	This has resulted in roughly $58K in costs avoided between 2010 and 2014.
2005: Add motion sensors to lighting for, e.g., rooms, corridors, and parking lots.	Facilities Services routinely installs occupancy sensors to power off lights when rooms are unoccupied. In the coming years, the department plans to install thousands of more sensors on campus.	
2005: Expand the use of energy management control systems in existing buildings for HVAC and lighting systems.	Campus is making progress towards establishing a centralized energy management system. Campus buildings are being equipped with meters to allow energy consumption data to be wirelessly transferred to a central collection point. This system will allow for regular audits of energy consumption and provide the data necessary to pinpoint further opportunities for energy savings in UT Knoxville buildings.	
2005: After implementing basic energy improvements that are known to be needed, conduct energy audits to identify further opportunities for energy savings in UT Knoxville buildings.	UT Knoxville is working with the Tennessee Valley Authority (TVA), and the Knoxville Utilities Board (KUB) to develop a 10-Year Strategic Energy Road Map for campus. As part of this project, TVA and its contractors are identifying energy savings opportunities in up to 10 campus buildings.	

Energy Consumption in Buildings

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Complete conversion to regional chiller plants for air conditioning.	Facilities Services installs regional chiller plants as old or inefficient chillers are replaced.	FS now follows a Chiller Plant set-point shaving to save costs.
2005: Explore using geothermal cooling where appropriate.	Campus is employing geothermal heating and cooling in the new Sorority Village.	Steam Plant feasibility study was conducted to utilize geothermal, however proved to be too costly.
2005: In new construction or renovation, design to maximize the use of natural lighting, use new technologies for energy-efficient lighting as they become financially feasible, and design for lower HVAC loads – e.g., by incorporating passive solar and natural ventilation features.	These practices and technologies are encouraged, though not required, by the campus' Sustainable Building Policy (see "Milestones") and the State of Tennessee Sustainable Design Guidelines.	Although not required, as our focus is safe and efficient buildings, this approach is taken with each new building.
2005: Explore the financial and technical feasibility of adding photovoltaic (PV) panels to selected roofs and surface parking areas; encourage UT Knoxville and UT/Battelle research on solar panels and other alternative energy technologies; work in collaboration with TVA's Generation Partners program.	During fiscal year 2009-10, the Student Environmental Initiatives Committee voted to support a $400,000 four-year project that will place a large PV on campus, possibly on the roof of the Neyland Drive (G-10) Parking Garage.	Installed 23kW on 11th street garage. Plans for two more arrays on 11th street garage are underway.
2011: Launch an Energy Managers Program.		
2011: Adopt energy use intensity (EUI) standard for new buildings and major renovations.		We now have an energy conservation policy for all buildings. The policy is room temperatures to heat to 68 degrees and cool to 76 degrees. Some buildings (like the music building) can apply for an exemption.
2011: Plan for an eventual transition to non-fossil fuel power sources for campus energy production.		Not implemented
2011: Consider scheduling classes outside of peak electricity use times.		Phase process: starting Fall of 2015 research and operational use will be attempted to be scheduled around these hours. Classes being scheduled around these hours will not be implemented. OoS will lead new campus wide energy campaign for off-peak energy use in Spring 2016.
2011: Provide continuing education to faculty, staff and students on reducing electricity use.		Accomplished. Power Down Challenge, Switch Your Thinking, Lightbulb Swap, Campus

Energy Consumption in Buildings

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
		Sustainability Day, and several other programs in operation as part of Make Orange Green.
2011: Utilize chilled water storage systems to transfer electricity use away from peak periods.		Various energy storage systems are under consideration.
2011: Incorporate passive solar water heating for buildings.		Not implemented
2011: Install energy efficient lighting in parking garages.		Proposed. Research by STARS team and enacted by energy task force.
2011: Conduct lifecycle analyses of the costs and environmental impact of energy technologies.		Energy task force utilizes this approach within facility services.
2016: Create an interactive Energy Dashboard with buildings across campus.		
2016: Expand Energy Policy beyond temperature settings to include suggested actions during campus breaks such as turn off/unplug power strips, computer power down, lights, etc.		

Air Pollution

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Increase investment in TVA's Green Power Switch ® program.	UT Knoxville currently purchases nine million kWh per year of green power through the TVA/KUB Green Power Switch® Program. This is up from the 6,075,000 kWh of green power purchased through the same program during fiscal year 2005-06.	Since 2011 we now offset 91,000,000 kWh annually (2015). Bids are underway to achieve 100% REC offsets by the end of 2016.
2005: Conduct lifecycle analyses of the costs and environmental impacts of energy technologies that could reduce dependence on the fossil-fuel-powered Steam Plant.	Not implemented.	Geothermal study completed; not feasible.
2005: Shift the UT Knoxville passenger vehicle fleet to hybrid electric vehicles.	UT Knoxville currently has five hybrid electric vehicles and 12 all-electric vehicles in its fleet. Of the 671 vehicles in the UT Knoxville fleet, at least 247 are flex-fuel vehicles (FFVs). Transportation Services fuels all FFVs with E85 fuel (pumped on campus) six months or more each year.	UT Knoxville currently has five hybrid electric vehicles and 17 all-electric vehicles in its fleet. Of the 639 vehicles in the UT Knoxville fleet, at least 340 are flex-fuel vehicles (FFVs). Transportation Services fuels all FFVs with E85 fuel (pumped on campus) six months or more each year.

Air Pollution

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Explore incorporating passive solar water heating into buildings.		During fiscal year 2010-11, the Student Environmental Initiatives Committee voted to support the purchase of a photovoltaic (PV) array that would heat water while generating power. A location for this recommended PV array has not been determined.
2005: Explore the technical and financial feasibility of onsite biodiesel generation from UT Knoxville agricultural waste products, with the biodiesel to be used in campus service vehicles.	The Southern Alliance for Clean Energy (SACE) has partnered with the UT Institute of Agriculture to open a 380,000 gallon-per-year waste-oil biodiesel plant at the UT Johnson Agricultural Research and Teaching Unit (JARTU). Facilities Services is not pursuing using this or other biodiesel for its vehicles because of the problems mentioned earlier in this table.	
2011: Broadcast air quality alerts on campus.		Not Implemented.
2011: Reduce car commuting miles per year to 25% below FY 2007-08 average.		Not accomplished. We now subscribe to Smart Trips to better track commuter data and also have daily scratch off permits.

Water and Sewer Use

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Continue to replace old plumbing fixtures with low-flow versions.	Facilities Services installs low-flow showerheads where possible. In addition, University Housing has installed "water saver" showerheads in all resident bathrooms.	FY 2011, Green Fee set aside 100k to install low-flow fixtures.
2005: Post signs encouraging water conservation in showers, rest rooms, kitchens, and laboratories.	Not implemented.	There are signs in the laundry rooms plus the yearly POWER challenge that advocates water and energy conservation.
2005: Install automatic turnoff faucets.	Facilities Services installs low-flow automatic faucets where possible.	Facilities Services installs low-flow automatic faucets where possible.
2011: Explore installing devices to curb water and energy use on showers on UT Recreational facilities (low flow shower heads, timers, etc…)		Low flow shower heads are partially implemented in recreational facilities.
2011: Explore further uses for storm water.		Implemented. Rain Gardens at Claxton, on the Ag Campus around Biosystems buildings, Mount Castle Park, Massey Courtyard, South Greenhouse. New housing

Water and Sewer Use

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
		will implement storm water for cold laundry toilets and irrigation MS4 program
2016: Create a more efficient irrigation program.		

Water Pollution

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Continue implementation of the Spill Prevention, Control, and Countermeasures (SPCC) plan.	A monthly inspection and annual detailed review are conducted to identify any storm water run-off issues at the Steam Plant. These procedures are supplemented by a visual check at the Steam Plant on a quarterly basis, and an annual detailed chemical analysis of storm water from the plant.	The SPCC plan is currently undergoing an update as of Sept 2015.
2005: Design new buildings and major renovations to capture storm water runoff for perimeter landscaping.	Several new campus buildings are designed to feature cisterns for capturing storm water collected from the project sites. We will catch the first 1" of each rainfall event.	Several new campus buildings are designed to feature cisterns for capturing storm water collected from the project sites. We will catch the first 1" of each rainfall event. MS4 program
2005: Continue the conversion from surface parking to structured multilevel parking.	This is being implemented and is included in the draft 2011 Campus Master Plan.	This is being implemented and is included in the draft 2016 Campus Master Plan.
2005: Explore "green roof" technologies.	In 2009, UT Plant Sciences researchers and local high school students constructed a demonstration green roof on top of a shed (also built by the students) at the Agricultural Campus. Additionally, the environmental portion of the Student Environmental Initiatives Facilities Fee is being used to construct a green roof at the Student Services building.	We have green roofs of the new UC, A&A.
2005: Plant floral species active in phytoremediation to absorb aqueous pollutants present in storm water runoff.	A demonstration rain garden has been installed next to Agricultural Campus green roof (see "Explore 'green roof' technologies).	Funding via a grant has constructed the Stormwater treatment wetland on the Ag Campus.
2011: Use permeable pavement on surface parking lots.	.	Implemented in front of gate 21. At Material Sciences building at Cherokee Farms there is permeable concrete at parking lots. Pedestrian bridge and the Engineering Quad also have permeable pavers. There are 37,408 sq. ft. of permeable pavers across campus.

Solid and Hazardous Waste

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Continue to publicize the hierarchy of "reduce, reuse, and then recycle."	Efforts to publicize and increase the visibility of campus recycling have been supported by programs such as Good Sports Always Recycle and RecycleMania.	More effort has been focused on publicizing the four R's of Waste Reduction: Reduce, Re-Use, Recycle, and Rot.
2005: Continue to increase the visibility of UT Knoxville's recycling program, as well as its educational program – in general and as targeted to residence halls. Develop material on recycling that can be included with new faculty and staff orientation.	The Office of Sustainability publishes *The Green Leaf* quarterly newsletter to inform campus about opportunities to participate in environmental programs and to provide them with updates about ongoing sustainability projects.	Recycling Guide has been created. A promotional video and newsletter has also been created. The Vol Network continues to expand the Good Sports Always Recycling program, which has led to an expansion of Game Day Zero Waste efforts.
2005: Make reusable dishware an option at all dining facilities.	UT Volunteer Dining has removed trays from many campus dining locations, saving approximately 49,500 gallons of water per week. A pilot program by UT Volunteer Dining allows faculty, staff, and students to purchase and use reusable take-out containers at the Southern Kitchen dining facility. The program has been so successful that UT Volunteer Dining is exploring the idea of offering more such containers for sale.	
2011: Compost 100% of green waste.		In progress. Currently estimated at around 20%
2011: Develop Green guidelines for proper sale and disposal of surplus equipment.		Not implemented.
2016: Migrate UT Recycling into UT Zero Waste, as an official name change for the office.		
2016: Develop a Zero Waste Policy for all campus operations, including but not limited to Athletics, Dining, Student Organizations, and Community Vendor-Sponsored and Supported Events.		
2016: Achieve an increase in diversion rate year after year to meet Zero Waste goal.		
2016: Implement a campus-wide ban on Styrofoam products including but not limited to Athletics, Dining, Student Organizations, and Community		

Solid and Hazardous Waste

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
Vendor-Sponsored and Supported Events.		

Procurement

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Require that recycled content paper be used for all printers and copiers.	Although not required to do so, Facilities Services and several other departments on campus have switched to 30-percent post-consumer recycled content paper.	18% of campus paper purchases have recycled content (FY2015).
2005: Include "green purchasing" information when campus contract purchasing information is distributed – e.g, information such as "certified wood products should be preferred in procurement practices, all other things being equal."	Not implemented.	
2005: Provide access to fair trade certified products (e.g., coffee, bananas, and cotton).	Students, faculty, and staff may purchase fair trade coffee in dining locations across campus.	
2005: Develop and implement a set of "green" procurement guidelines that include energy, paper, vehicles, computers, and food (all of which we collect data for) with an emphasis on local, if applicable.	The Energy Conservation Policy specifies that ENERGY STAR qualified equipment, systems and appliances shall be purchased whenever such products are available and the following two conditions are satisfied: 1) The quality and function of the ENERGY STAR qualified product is equal or superior to that of non-ENERGY STAR qualified products; and, 2) The additional upfront cost of the ENERGY STAR qualified product is less than its resulting lifecycle energy savings. The Energy Conservation Policy also states that energy-efficient flat panel computer monitors shall be purchased unless medical, instructional, research or other special requirements necessitate the use of less efficient CRT monitors.	Nothing new Implemented
2011: Establish access to more locally grown organic products.		A percentage of Aramark purchases including dairy, produce, and vegetables are from a 250 mile radius of campus

Procurement

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2011: Negotiate with paper product providers to offer access to a wider variety of recycled content products (currently 23% of products in bookstore are from recycled content).		
2011: Utilize recycled content paper in products bearing the UT trademark, especially time-sensitive materials, such as day planners.		
2011: Create a task force on green purchasing that would study current purchasing practices, compare them with the best practices and make recommendations.		Implemented, does not exist as of FY'15

Motorized Transportation

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Aggressively pursue a "Smart Trips" program with a cross promotion with parking and other entities.	UT Knoxville is a member of Knox Smart Trips. This program is designed to improve the region's air quality by easing traffic congestion. Faculty and staff who sign up for Smart Trips and regularly log their alternative commutes are eligible for free emergency rides home, as well as 'Commuter of the Month' prizes, courtesy of Smart Trips. In November of 2010, Smart Trips awarded campus with the "Green Spirit" award for its participation with Smart Trips' annual Commuter Challenge.	In 2015 UT became a sponsor of Smart Trips, which allows the Office of Sustainability to obtain more accurate alternative transportation data, in addition a way to connect to those who use alternative transportation.
2005: Create incentives to reduce the number of solo drives to campus, such as lower-cost parking passes with limited use.	Faculty, staff and students may purchase subsidized transit passes for use on most Knoxville Area Transit fixed routes. A van pool program offers one large van for lease to UT Knoxville employees on a monthly basis.	There is now only a minor discount on city bussing. Van Pool Program no longer exists.
2011: Develop an alternative transportation task force to identify potential green transportation initiatives and a pathway to fund these initiative.		Not implemented

Motorized Transportation

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2011: Provide an incentive program for individuals willing to park in alternative lots		As of FY '14 parking services has created an alternative parking pass
2011: Provide flexible parking permit options (partial permits, tiered permits, car-pool permits) so that faculty and staff are charged per use, rather than paying for a full pass		As of FY '14 parking services has created an alternative parking pass
2011: Consider commuter habits in the next few decades, not just current patterns		Not implemented, suggest to work with civil engineering, transportation demand management, specifically Center for Transportation Research
2016: Form a Vehicle Task Force to assess current UT Fleet and to consider its environmental impact.		
2016: Implement "green" technology into parking garages. (e.g. solar panels on garage, LED lights, EV Charging, Smart Parking Tech)		
2016: Implement fuel saving measures and programs to reduce average overall fuel consumption from 2016 and 2021 levels.		
2016: Evaluate campus vehicles to assess percent of alternative fuel vehicles to expand their use.		

"Green" Buildings

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Formally adopt the policy that on all new construction and renovation of major buildings, LEED certification will be sought.	Sustainable Building Policy established for campus in 2007 (see "Milestones") requires buildings to be built to the minimum standards of LEED. In addition, the State of Tennessee Sustainable Building Guidelines are based on the LEED v.2.2 rating system. However, there is no campus policy that requires LEED certification (although we have several buildings that are certified).	LEED Silver: Ayres Hall, Natalie L Haslam Music Center, Student Health Clinic LEED Certified: Joint Institute for Advanced Materials, Min Kao Electrical Engineering & Computer Science, Joint Institute for Neutrons Sciences State Sustainability Standard: University Center, Fred D Brown Jr. Residential Hall, Howard H. Baker Center for Public Policy (built to LEED Silver standards),
2005: Retrofit older buildings to meet LEED certification guidelines.	The renovation of Ayres Hall, completed in January 2011, was done to LEED Silver standards and was subsequently certified.	No new major renovation achieved.

"Green" Buildings

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2011: Incorporate geothermal heating and cooling systems in new buildings when appropriate.		Implemented, Sorority Village and evaluated for Steam Plant (not implemented)
2011: Maximize natural lighting and new technologies for more efficient lighting when designing/building/renovating buildings on campus.		Dedicated team (STARS) established to research technology that incorporates technologies mentioned. Energy Task Force utilize Green Revolving Fund to implement projects.
2016: Implement Green Office Program campus-wide.		

Landscaping

Recommendations of 2005 and 2011 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Emphasize using native plant species.	The UT Gardens has a section dedicated to growing native plant species on campus.	Native plant species are used all across campus, however not in ornamental capacities
2005: In ornamental planting, use drought resistant species.	For campus landscaping projects, Grounds/Transfer & Hauling selects plant species that are appropriate for the East Tennessee climate.	
2005: Investigate ways to reduce the number of acres mowed and increase green space in a way that doesn't require mowing, where possible.	Not implemented.	Sorority Village and Hillside are not mowed. Stormwater Master Plan requests green space increase.
2005: Transition to turf and other permeable surfaces that require little or no mowing.		Implemented for intramural fields and as of FY'15 Circle Park has been converted to natural/turf hybrid sod system.
2016: Investigate low emission landscaping equipment.		

Green Spaces; Accommodations for Pedestrians and Bicycles

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Continue to expand the network of walkways and outside meeting places on campus.	This will be addressed in the 2011 Campus Master Plan.	Included in 2016 Master Plan. Second Creek Outdoor Classroom has expanded campus meeting places.

Green Spaces; Accommodations for Pedestrians and Bicycles

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: For walkways, use permeable surface material where feasible.	The Gate 21 Plaza at Neyland Stadium features permeable pavement and Silva Cells that allows trees to grow in uncompacted soils and permits on-site infiltration of storm water run-off.	There are 37,408 square feet of permeable pavers. Furthermore, Pedestrian Bridge pavers also act as detention to capture stormwater and slow the rate of discharge. 40 Silva Cells have also been installed around campus.
2005: Create a system of dedicated bike trails in the campus area.	The draft 2011 Campus Master Plan includes a recommendation for creating a major east-west bicycle route through the center of campus.	We promote the 86 miles of greenways and trails in Knoxville.
2005: Create dedicated bicycle lanes on roads, in order to permit safe travel among major destination point throughout the campus and to link with off-campus bicycle commuting routes.	The draft 2011 Campus Master Plan calls for establishing an extensive system of bike lanes, with improved connections to the Knoxville greenway system.	Bike lanes exist as of FY 2016, however construction does not make it as accessible.
2011: Give priority to implementation of bicycle/pedestrian accommodations as described in the 2011 Campus Master Plan.		In progress, also being highlighted in 2016 campus landscape master plan
2016: Every two years assess bicycle infrastructure access, awareness, and possible opportunities for expansion.		
2016: Fund a greenway reroute project to connect greenway from main campus below Neyland Stadium, to Neyland greenway upstream of G10 parking garage.		

Student Involvement

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2011: Work with SPEAK and other student organizations to encourage greater student involvement in sustainability efforts at UTK.		Implemented
2016: Develop a formal relationship with academics and Facilities Services to provide additional support for Experience Learning opportunities.		
2016: Increase non-voting student participation among Green Fee Committee.		

Greenhouse Gas Emissions

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2011: Foster and coordinate on-campus carbon offset projects.		Not implemented.
2011: Encourage combining trips, carpooling and using public transit for university-sponsored travel.		Not implemented
2011: Encourage driving versus flying for university-sponsored trips that are within 300 miles of Knoxville.		Not implemented

Development Efforts

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2011: Create a list of high-visibility sustainability projects, and initiate a campaign within the Development Office to solicit funds for these projects from alumni and especially corporate donors.	Environmental stewardship fund implemented.	
2011: Establish special forms of recognition for green donors.		Not implemented
2011: Better promote the Environmental Stewardship Fund to faculty and staff on campus.		Implemented, increased marketing has been in effect since FY 2014.
2016: Include Environmental Leadership Awards into the Chancellor's Annual Award Ceremony.		

Food

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Make organic and regionally grown food available on campus.	Packaged organic food items are sold on campus at PCB Grocery. UT Volunteer Dining is exploring opportunities to offer food items prepared from the native herbs and spices grown at the UT Culinary Institute's Spice Garden.	The UT Kitchen Gardens host a farmers market on campus which sells local and organic food, in addition they also sell directly from the garden.
2011: Improve and increase sustainable initiatives in operations of Volunteer Dining.		In progress; constantly working with Aramark to improve sustainability in dining.
2016: Collect, analyze and publish dining expenditure and operation impact annually.		
2016: Develop a Food Policy that promotes local, organic, vegan, and Fair Trade goods.		

Food

Recommendations of 2005, 2011, and 2016 Reports	Achievements since 2005 Report	Achievements since 2011
2016: Perform annual outreach campaigns to promote current sustainable food options.		
2016: Develop a Sustainable Food Policy task force every three years to assess and identify opportunities.		
2016: Create position for Sustainable Dining Coordinator housed Office of Sustainability.		
2016: Meet 100% of STARS criteria for Dining.		

3. History of UT's Environmental Progress

The below table features recommendations that have been kept for reference as they either have been accomplished or do not apply anymore due to technology or regulation changes over time. Although we no longer recommend these below actions, it's imperative to keep a list for reference as we move forward toward carbon neutrality by 2061.

History

Recommendations of 2005 and 2011 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Create an Environmental Coordinator position within Facilities Services to coordinate with such areas as Facilities Planning, Development, Parking Services, Dining Services, University Housing, and Environmental Health and Safety.	UT Knoxville has created an Environmental Coordinator position to manage the campus recycling and waste reduction program. In addition, a Sustainability Manager has been hired to promote energy conservation and efficiency programs, as well as education/outreach activities that communicate campus' environmental commitment. Both positions are housed and funded through the Facilities Services.	
2011: Take all feasible measures to reduce coal use; replace coal with natural gas at the steam plant.		Last coal pile burned April 2015, supplemental/emergency fuel is #2 oil, primarily use natural gas.
2011: Utilize Green Fee to launch major efficiency projects on campus.		Accomplished/In Progress. Green Revolving Fund in place.
2005: Continue conversion to biodiesel for service vehicles.	Not implemented by Facilities Services because of problems with biodiesel thickening and becoming difficult to dispense when stored for long periods of time or in cold weather.	First transit uses B5.

History

Recommendations of 2005 and 2011 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Install a dry scrubber at the Steam Plant to help meet new mercury emissions regulations.	Not implemented. Mercury emissions at the Steam Plant (tested at 0.0000085 lbs/MMBtu) comply with current environmental regulations.	No longer needed because of conversion to natural gas.
2005: Continue to evaluate waterless urinals and other water-saving devices.	Campus buildings constructed or renovated since about 2000 have water-efficient single flush toilets (1.6 gallons per flush - gpf) and urinals (0.6 gpf). In buildings currently under the construction, even more efficient single flush toilets and urinals are being installed. These fixtures are rated at 1.28 gpf and 0.125 gpf, respectively.	Baker Center is the only building to continue to use waterless urinals because of complaints elsewhere on campus.
2005: Explore reusing "storm water".	Several new construction projects employ storm water cisterns for the collection and use of grey water for future irrigation.	Now being implemented via MS4 program and managed by Stormwater Coordinator within Facilities Services.
2005: Continue work on sediment control, as has been done recently at the Steam Plant to divert runoff from the coal storage area.	The Knoxville campus has a Storm Water Pollution Prevention Plan (SWPPP) for the Steam Plant. This plan identifies sources and activities at the plant that may contribute pollutants to storm water and commits the campus to specific control measures.	The plan is being updated due to the campus' switch from coal to natural gas. Water Quality Unit removes 80% of suspended solids.
2005: Improve management of the riverbank and associated riparian corridor on the UT Knoxville farm property west of the Alcoa Highway ("Buck Karns") Bridge, along the Tennessee River.	Improvements of the riverbank and riparian corridor on Cherokee Farm are being addressed. Most recently, a project has been implemented that includes the construction of a greenway and the introduction of riverbank flora to the area.	Accomplished
2005: Explore options for recycling additional materials such as electronic equipment, Styrofoam, and ash from the Steam Plant.	UT Knoxville's recycling program has been expanded to include electronic equipment, batteries, scrap metal, printer cartridges, and many more materials.	We no longer have coal ash on campus as the last coal pile was burned March 2015.

History

Recommendations of 2005 and 2011 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Continue to expand special event recycling opportunities.	UT Recycling fosters and coordinates several recycling-themed events over the course of each school year. In 2010, campus participated in the EPA Game Day Challenge, a friendly competition to see which college or university can recycle and reduce waste the most during one home football game in October. UT Recycling offers composting at a number of special events, including the Freshman Picnic in August and select meals during the Destination Imagination Global Finals in May.	Zero Waste events is now an option via UT Catering.
2005: Develop guidelines for ways to minimize the use of hazardous chemicals in laboratories.	In February 2011, Environmental Health and Safety implemented a Mercury Reduction policy. The policy is intended to reduce the generation of mercury waste to the extent that is technically and economically feasible. Other objectives include: improved environmental compliance, reduced risk to employees, and resource conservation.	
2005: Explore substitutes for individually bottled water, such as metered "for pay" spring water dispensers.	UT Knoxville is doing its part to limit waste from bottled water by providing water refill stations in high-traffic campus buildings. To date, stations have been installed at the Aquatic Center, TRECS, Hodges Library and the University Center.	In total, the university has 113 refill stations in 54 buildings on campus. The estimated number of bottles saved as of 1/1/16 is 2,394,208 since 2011.
2005: Implement a campus food waste composting program using local composting resources.	Campus composting program launched in 2010 (see "Milestones")	In addition to Campus Composting, the Food Recovery Network was established in 2013. For the Campus program alone, UT has composted over 3934.11 tons of material, much of which is food (since 2010).

History

Recommendations of 2005 and 2011 Reports	Achievements since 2005 Report	Achievements since 2011
2005: Implement measures such as recycling in tailgate areas during football games, and the placement of outdoor recycling bins.	On football game days, UT Recycling and student volunteers place hundreds of recycling bins in tailgate areas. Outdoor recycling bins are available between the Volunteer Boulevard Parking Garage and Apartments Residence Hall, and behind Fraternity Row. In spring 2011, UT Recycling started a pilot with one walkway recycling bin at each of the following campus locations: Pedestrian Mall, Money Wall, and The Hill.	Since 2011 UT Recycling has achieved a #1 status for total waste diversion with Game Day Zero Waste, via the Game Day Challenge competition. In addition all football games are powered via green power (RECs). UT Recycling also saved Athletics 50% of cleanup cost in 2014 by using student volunteers, which has increased the diversion rates.
2011: Divert 20% of waste from landfill by FY 2020-21.		By FY15 we diverted 31% of waste from landfill
2011: Develop material on recycling that can be included with new faculty and staff orientation.		Implemented. UT Recycle pamphlet.
2011: Purchase a recycling pallet grinder for composting purposes.		Not Implemented. We currently have them picked up and then they are either reused or recycled by the vendor.
2011: Develop a campus-wide procurement policy that would require: 1) Recycled content paper be used for all printers/copiers. 2) Including green purchasing info when campus contract purchasing info is distributed.		Not implemented, however, FY'14 paper purchase inventory was performed to identify opportunities
2011: Increase purchases of higher fuel efficiency vehicles for the motor pool to continually meet or exceed annual fuel efficiency targets. Goal: 20% fleet fueled with alternative fuels.		Ongoing, we have continued to increase our use of electric and flex-fuel vehicles. 50% of the University's fleet is on flex-fuel.
2011: Continue to explore new options for the use of alternative fuels in service vehicles.		Task force created in FY'14 to evaluate campus motorpool
2011: Reconsider the approach to parking on campus (which has been to accommodate demand)		In progress '16 master plan to be published
2011: Move parking to periphery of campus.		In progress '16 landscape master plan to be published
2005: Encourage and provide funds for LEED training and certification for UT Knoxville employees such as Building Representatives and staff in Facilities Services, Housing, etc.	Facilities Services has two LEED-AP certified staff members.	Facilities Services has at least 1 LEED-AP certified staff members. There are several professors in the School of Architecture who are also certified.

History

Recommendations of 2005 and 2011 Reports	Achievements since 2005 Report	Achievements since 2011
2011: Require that all new campus buildings meet LEED silver standings or better.		Policy is to build to minimum LEED standards.
2005: When renegotiating mowing/leaf cleanup contracts, require that equipment meet strict environmental standards for low noise and low air emissions.	Since spring 2009, Grounds/Transfer & Hauling has been responsible for most mowing and leaf cleanup on campus. Grounds/Transfer & Hauling uses only low noise (less than 65 db) leaf blowers.	
2011: Consider hiring a dedicated full-time landscape architect to plan campus beautification projects.		Implemented, 2 full time LAs on staff, 3 LA student interns per semester.
2011: Construct a larger spice garden including both organic and native species.		We currently have spice garden with native and organic species, however we are unable to define if it's "larger".
2011: Consider funding and implementing further beautification projects.		A campus beautification facilities fee exists, average 1.1 million per fiscal year.
2005: Establish a task force to plan for improvement of bicycle access throughout the campus and to work with city government to link campus and off-campus bicycle commuting routes.	A working group of the Campus Planning Advisory Committee has completed surveys of bicycling patterns on campus in an effort to improve access and conditions for bicyclists traveling to and from the Knoxville campus. The draft 2011 Campus Master Plan includes recommendations for extending and expanding the Pedestrian Mall, as well as, a pedestrian footbridge to The Hill area.	Over 100 new bike racks have been installed via sustainability transportation courses. In addition, the 2015 master plan includes additional bike lanes. Finally, Dr. Cherry is conducting a greenway study as of FY16.
2005: Continue new and replacement tree planting.	Approximately 100 trees get planted on campus each year.	Facilities Services hired an arborist and the Green Fee has allocated $20,000 for new tree planting for 2016.
2011: Require first-year students to live on campus to reduce commuting emissions.		Implemented
2011: Allow for increasing periods of heat, drought and heavy rainfall in the design of campus buildings and in campus landscaping.		Implemented
2011: Consider making campus buildings and landscaping more resistant to violent storms.		Implemented. FY 2015 stormwater coordinator was hired to retain and utilize rainwater collected over a half inch over a 72 hour period via the MS4 program.

History

Recommendations of 2005 and 2011 Reports	Achievements since 2005 Report	Achievements since 2011
2011: Use part of the environmental portion of the Student Environmental Initiatives Facilities Fee or the Environmental Stewardship Fund to set up a revolving green fund.		Implemented as of FY 2014, dedicated to energy retrofit projects (Green revolving fund).

4. Environmental Indicators

The 2005 Environmental Progress Report provided indicators of environmental progress on the Knoxville campus for the following:

I. Energy consumption in buildings (electricity, coal, natural gas)
II. Air pollution
III. Water and sewer use
IV. Water pollution
V. Solid and hazardous waste
VI. Procurement
VII. Motorized transportation
VIII. "Green" buildings
IX. Landscaping
X. Green spaces; accommodations for pedestrians and bicycles

For purposes of continuity and comparison, we have retained the above indicators from the 2005 report and also kept the below 2011 additional recommendations:

XI. Student Involvement
XII. Greenhouse Gas Emissions
XIII. Development Efforts

In the 2016 Progress Report we have added another indicator as it has been found to have increased importance on campus, both in terms of environmental stewardship and campus population activism:

XIV. Food

Much of the information below is presented as "per student" or "per square feet," to enable comparisons over time. Where quantitative information was not available, indicators are discussed qualitatively.

All of this information is to be understood in the context of campus growth. Currently, the Knoxville campus (main campus and Agricultural campus) includes over 580 acres with over 250 buildings.

Student enrollment has not changed much over the past 20 years:

1989-90: 25,611 students enrolled
1999-00: 25,981 students enrolled (1% increase from 1989-90)
2009-10: 27,107 students enrolled (4% increase from 1999-00)
2014-15: 27,410 students enrolled (< 1% increase from 2009-10)

However, campus building space has grown significantly during this same time period:

1989-90: 11,203,307 square feet
1999-00: 13,006,937 square feet (16% increase from 1989-90)
2009-10: 14,734,337 square feet (13% increase from 1999-00)
2014-15: 15,495,697 square feet (5% increase from 2009-10)

This amounts to 448 square feet per student in 1989-90, 501 square feet per student in 1999-00, 544 square feet per student in 2009-10, and 565 square feet per student in 2014-15.

University acreage had also expanded by an additional 204 acres with the inclusion of the new Sorority Village (16 acres) and the Cherokee Farm (188 acres).

With ongoing construction and continued improvements to existing facilities, campus building space is likely to continue to grow. Nevertheless, UT Knoxville has made considerable progress over the last few years in reducing both consumption of energy and materials and preventing pollution. The indicators below illustrate improvements over time and although much more work is to be done, the work and accomplishments thus far are still noteworthy.

I. Energy Consumption in Buildings

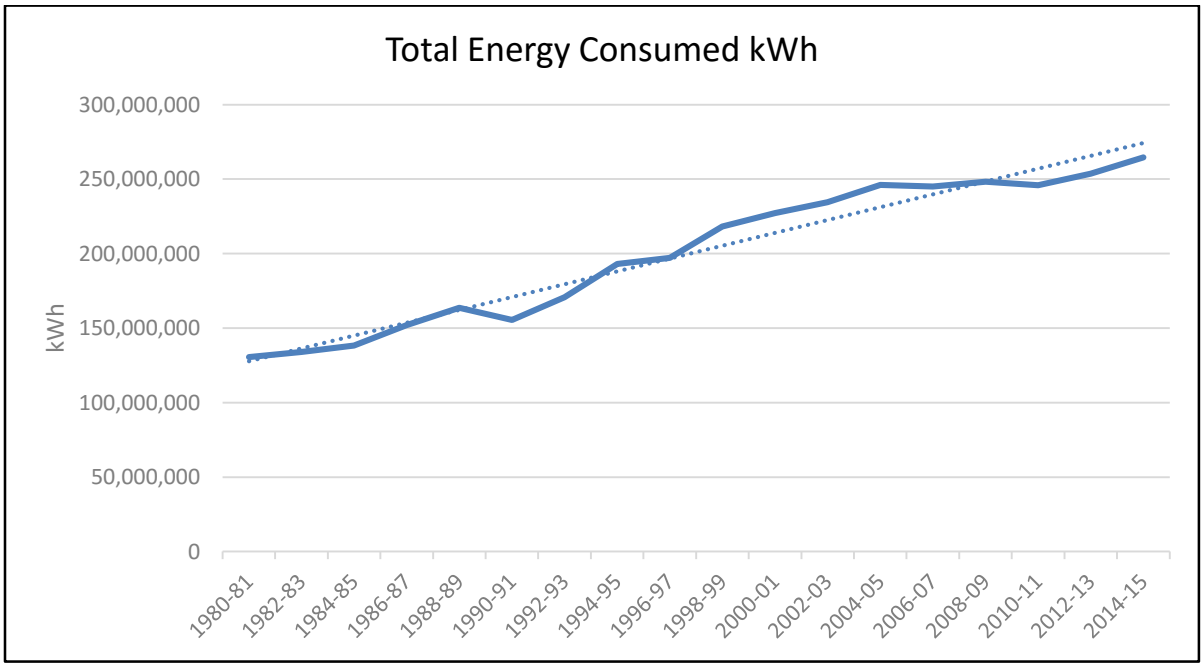
i. On-Campus Electricity

UT Knoxville's electricity is supplied by the Tennessee Valley Authority (TVA) through the Knoxville Utilities Board (KUB). The UT Knoxville Steam Plant also operates a five megawatt electrical power generator when it is economical to do so.

Electricity is used mainly in campus buildings for lighting, computers, air conditioning, etc., but also outside for street lighting, etc. The campus had seen continuous growth in electricity use until 2009-10. In fiscal year 2010, there was a significant drop in on-campus electricity consumption from the previous year. The recorded on-campus electricity use for 2009-10 is the lowest recorded number in the past decade. However, there has been an increase in the 5 years following.

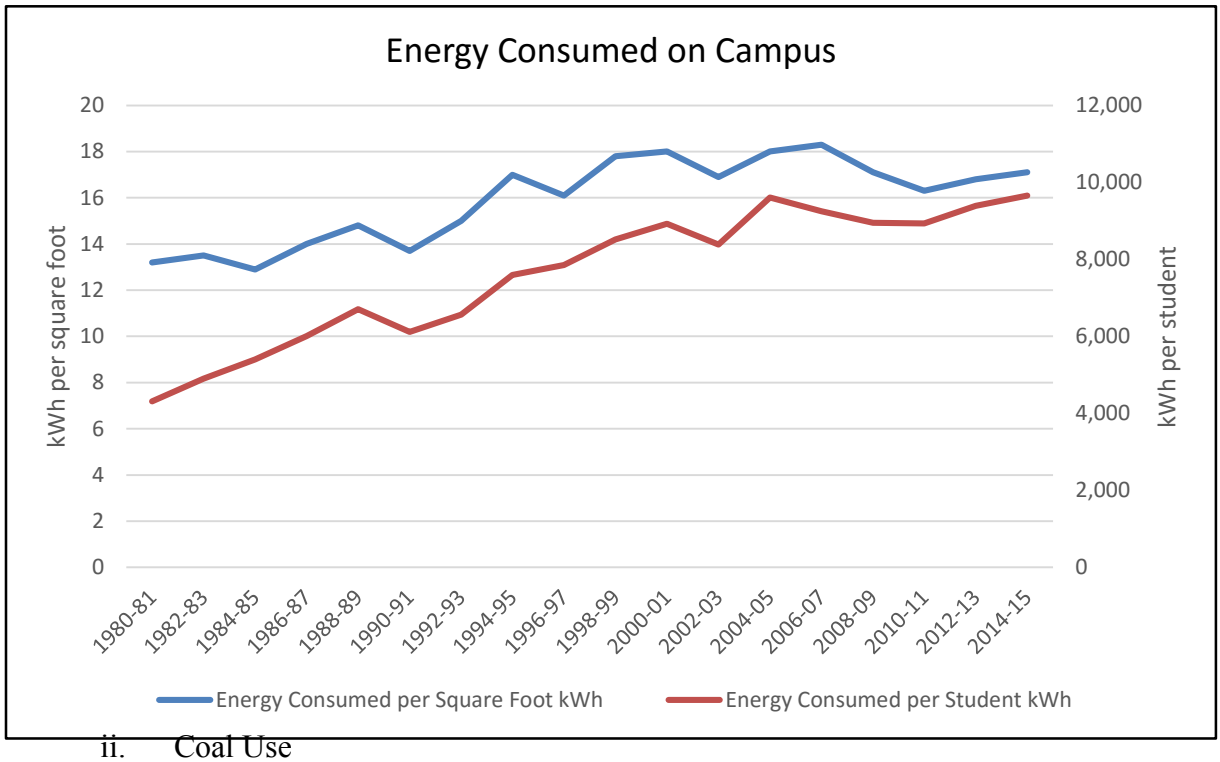
On-Campus Electricity Consumption (kilowatt-hours)

	1979-80	1989-90	10-yr. change	1999-00	10-yr. change	2009-10	10-yr. change	2014-15	5-yr. change
Total	127,037,382	169,424,595	+33%	220,464,333	+30%	220,963,070	0%	264,618,610	+17%
Per Student	4,180	6,773	+62%	8,486	+25%	8,152	-4%	9,654	+16%
Per Sq. Ft.	12.9	15.1	+18%	16.9	+12%	15.0	-12%	17.08	+12%



These two charts depict the kilowatt hours of energy consumed on campus per square foot and per student. This allows for a comparison of energy usage while taking in consideration the growth of the campus. The total energy consumed per square foot and per student had

plateaued from 2002 to 2005 and then decreased shortly after. However, in recent years there was a slight steady increase in energy consumed on campus, which can be tied to new construction.



ii. Coal Use

The University has moved away from the use of coal in the on-campus Steam Production Plant and as of April 2015 has completely eliminated coal from any on-campus energy production. Though this does not change the amount of energy used on campus, this does improve air quality and leads campus to a slightly more reliable and stable energy source.

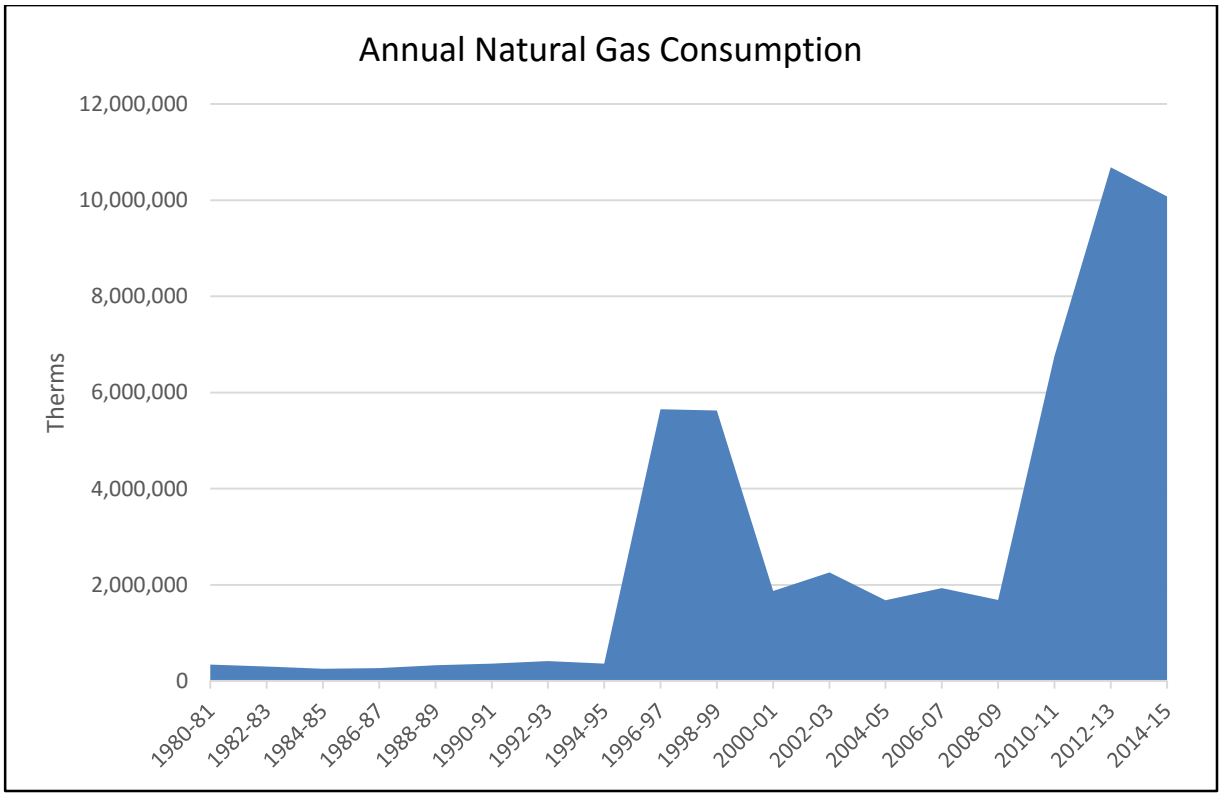
iii. Natural Gas Use

Natural gas is cleaner to burn than coal. It produces fewer pollutants such as sulfur dioxide, nitrogen oxides, particulate matter, and mercury. The cost of natural gas fluctuates regularly: in 1989-90, natural gas was $0.59/therm; 1999-00, $0.37/therm; 2009-10 back to $0.59/therm. Now natural gas prices have risen greatly, to $0.76/therm. (Adjusted to 2015 dollars using Consumer Price Index inflation adjustment.) The historic average for the period 1979-2010 is $0.64/therm. Despite constant fluctuation, the price of natural gas is predicted to remain reasonably stable in the foreseeable future.

UT Knoxville's use of natural gas has increased substantially in the past two decades, especially in the last 15 years, some of which can be attributed to the campus's move from coal to natural gas in the steam plant:

Natural Gas Consumption (Therms)

	1979-80	1989-90	10-yr. change	1999-00	10-yr. change	2009-10	10-yr. change	2014-15	5-yr. change
Total	340,115	332,892	-2%	5,675,407	+1605%	7,323,560	+29%	10,074,862	+28%
Per Student	11.19	13.31	+19%	218.44	+1542%	270.17	+24%	367.56	+27%
Per Sq. Ft.	0.034	0.030	-14%	0.436	+1368%	0.497	+14%	.65	+24%



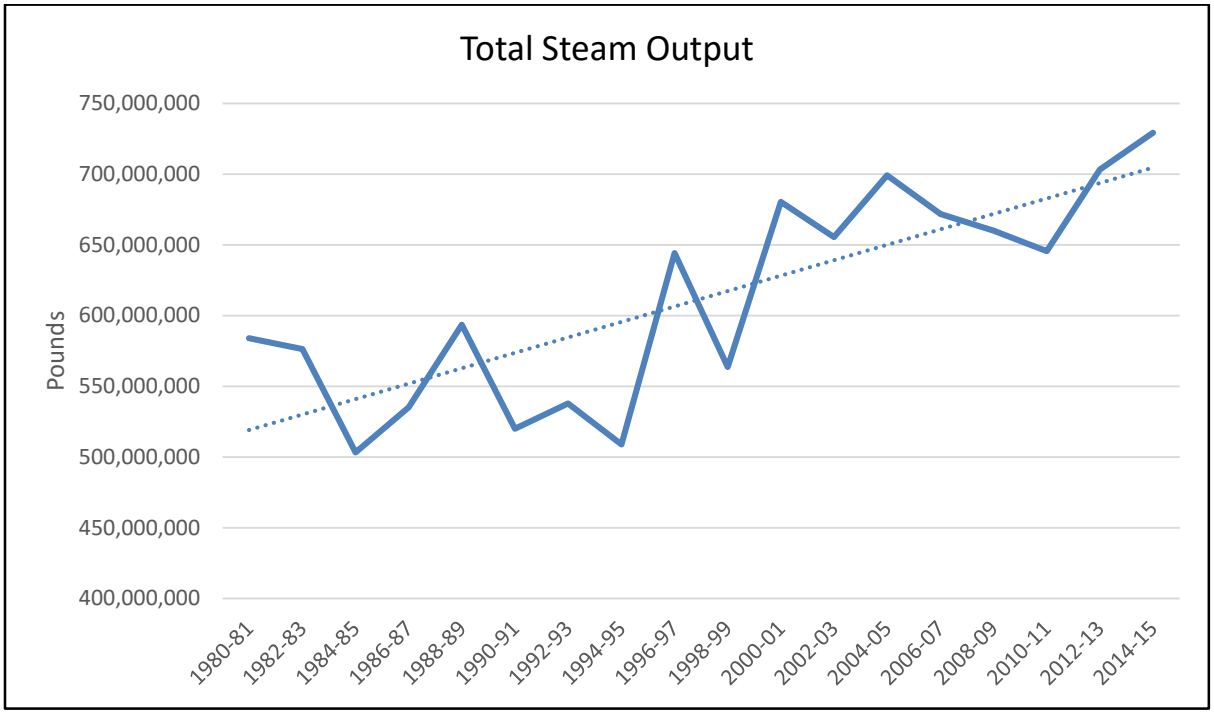
iv. Translating Coal and Natural Gas into Their Outputs

Together, coal and natural gas used at the campus Steam Plant produced the following amounts of steam over the past four decades. However, coal was eliminated from this equation in April 2015:

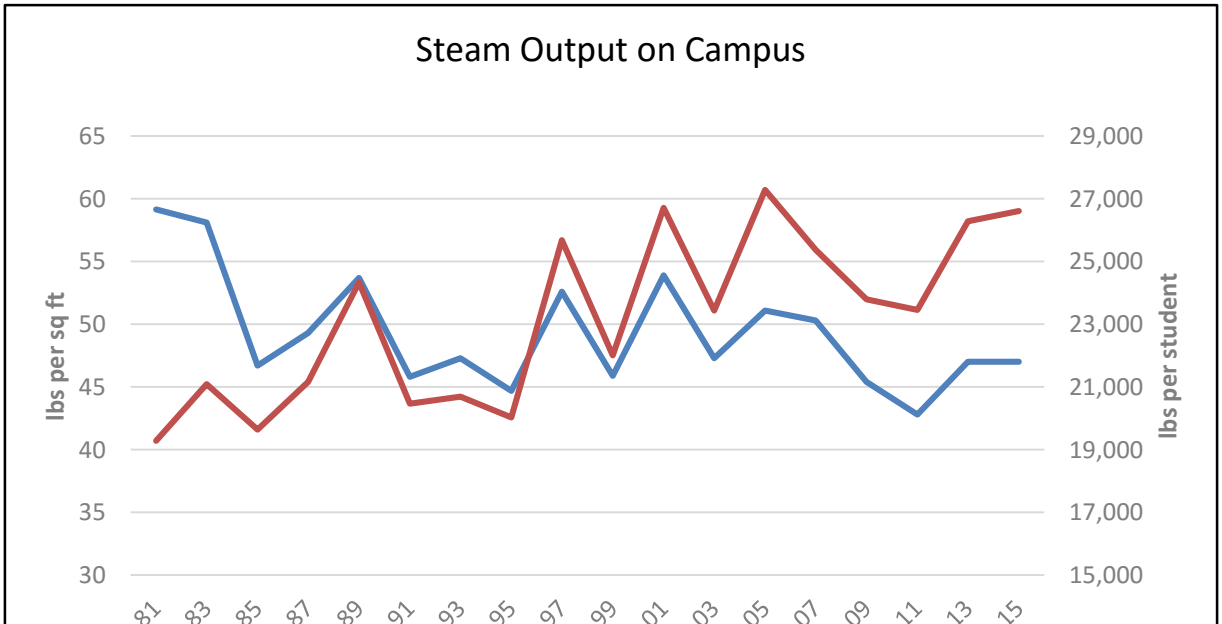
Steam (Pounds)

	1979-80	1989-90	10-yr. change	1999-00	10-yr. change	2009-10	10-yr. change	2014-15	5-yr. change
Total	596,952,379	563,338,000	-6%	584,840,834	+4%	651,360,000	+11%	731,271,821	+11%
Per Student	19,713	22,519	+14%	22,510	-0.04%	24,029	+7%	26,913	+11%
Per Sq. Ft.	60.5	50.3	-17%	45.0	-11%	44.2	-2%	47.1	+6%

Though the total steam output seems sporradic, the trend line suggests that the university is steadily increasing the amount of steam produced in the steam plant on campus.



This chart shows that though there are irregularities throughout the years, the steam output has decreased significantly in pounds produced per square foot of campus since the 1980s. However, it also suggests an upward trend of pounds of steam output per student.



II. Air Pollution

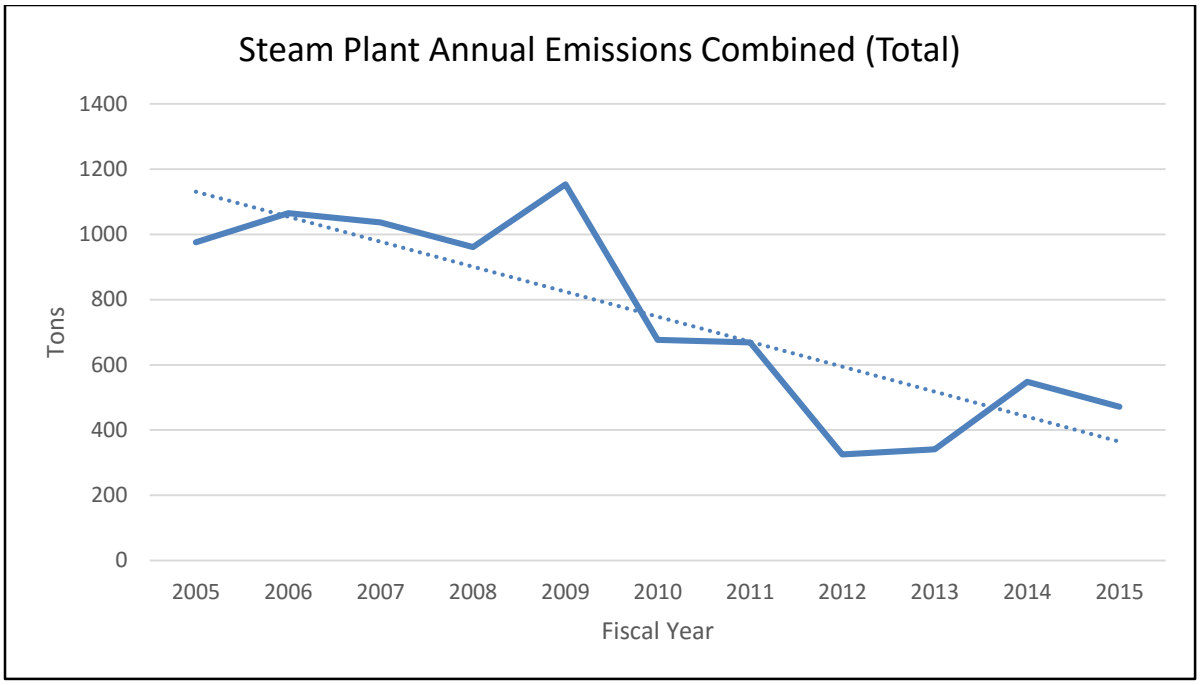
i. Steam Plant Emissions

Air pollution comes from stationary sources, such as the UT Knoxville Steam Plant; from on-road mobile sources, such as vehicles traveling to and from UT Knoxville; and from off-road mobile sources, such as construction and landscaping equipment. There are few large industrial plants or power generation sources in Knox County, which leaves the UT Knoxville Steam Plant as one of the largest stationary sources of air emissions in the county. Its emissions of "criteria" air pollutants (air pollutants identified for regulation under Title V of the federal Clean Air Act) have been as follows:

Fiscal Year Emissions since 2010:

Regulated Pollutants (Limit)	EMISSIONS (Tons)					
	2010	**2011**	**2012**	**2013**	**2014**	**2015**
PM10 (NA)	6.50	5.81	3.93	4.40	5.36	4.68
SO_2 (1638)	460.96	463.76	189.41	181.71	347.88	305.80
VOC (248.9)	1.79	1.58	1.95	2.21	2.05	2.09
NOx (279)	126.56	116.69	75.74	91.47	120.88	93.10
HCl (30)	10.17	10.42	0.00	0.00	0.00	0.00
HF (10)	1.27	1.30	0.00	0.00	0.00	0.00
CO (245.9)	69.61	69.52	54.81	61.20	72.29	65.95
Total:	676.86	669.08	325.84	340.99	548.45	471.62

PM10 = particulate matter 10 microns in diameter or greater
SO_2 = sulfur dioxide
VOC = volatile organic compounds
NOx = nitrogen oxides
HCl = hydrogen chloride
HF = hydrogen fluoride
CO = carbon monoxide



The steam plant annual emissions combined are estimated by applying formulas from the U.S. Environmental Protection Agency (EPA) to coal and natural gas inputs at the Steam Plant. Currently, there is no measuring device employed "at the stack." The Knoxville campus applied to the Knox County Department of Air Quality Management for UT Knoxville's original's Title V permit in 1999.

The permit established emissions limits and the method of determining emissions rates as well as allowing the campus to use the EPA formulas to calculate emissions rates, rather than performing actual emissions tests.

Steam Plant emissions remained steady leading into fiscal year 2009-10. During that year, campus recorded drastic decreases in its particulate matter (PM) emissions. This drop is attributable to the fact that natural gas rather than coal was burned at the Steam Plant during 2010. Since that date, the university has slowly transfigured the once coal-burning steam plant to a natural gas burner, a cleaner fuel source. The last piece of coal was burned in April 2015. The decrease in pollutants from the steam plant is evidence of how much healthier the air is on campus now that coal is no longer used.

Presently, the Steam Plant Title V permit only requires controls on particulate matter (PM) emissions. That control is maintained through an electrostatic precipitator, and its efficiency is continuously monitored through opacity measurements. If opacity exceeds 20% for more than six minutes, the plant is out of compliance and must report these excursions. The excursions are mostly due to start-up and shut-down of equipment.

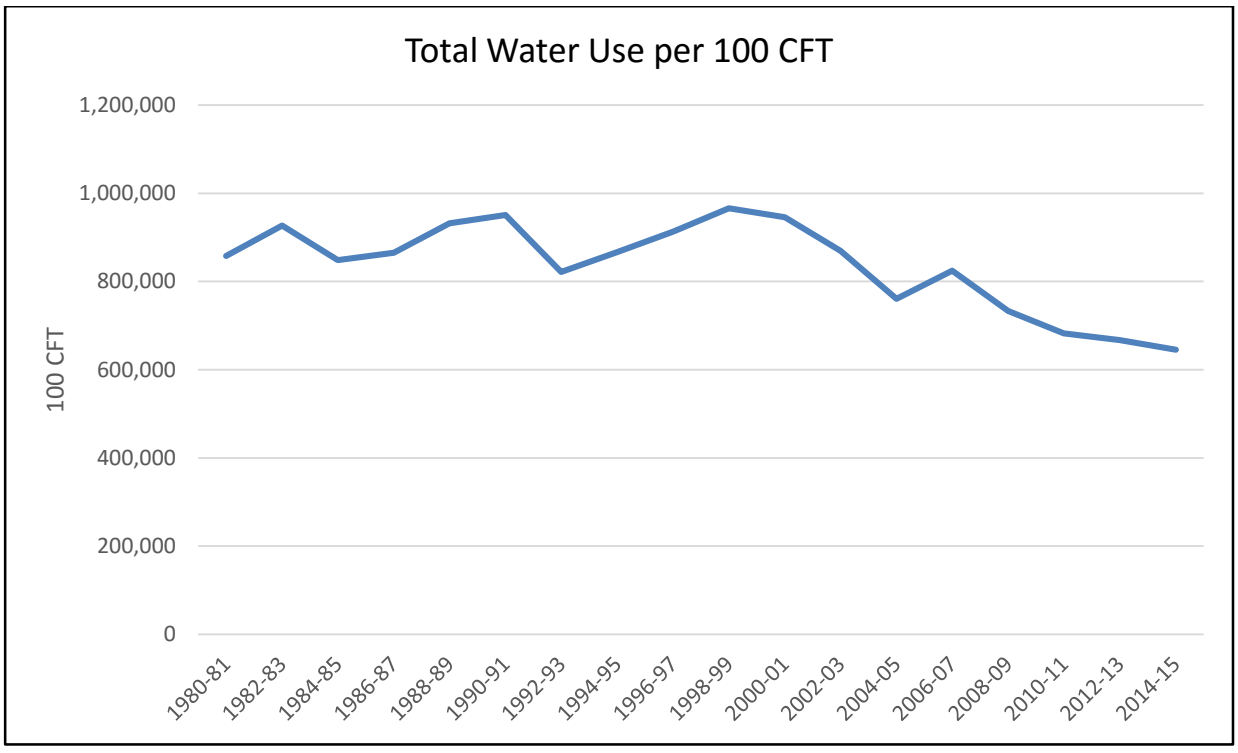
It should be mentioned that the above emission chart and discussion is not the entirety of UT Knoxville's emission profile (only a small portion), which is discussed later in the report.

III. Water and Sewer Use

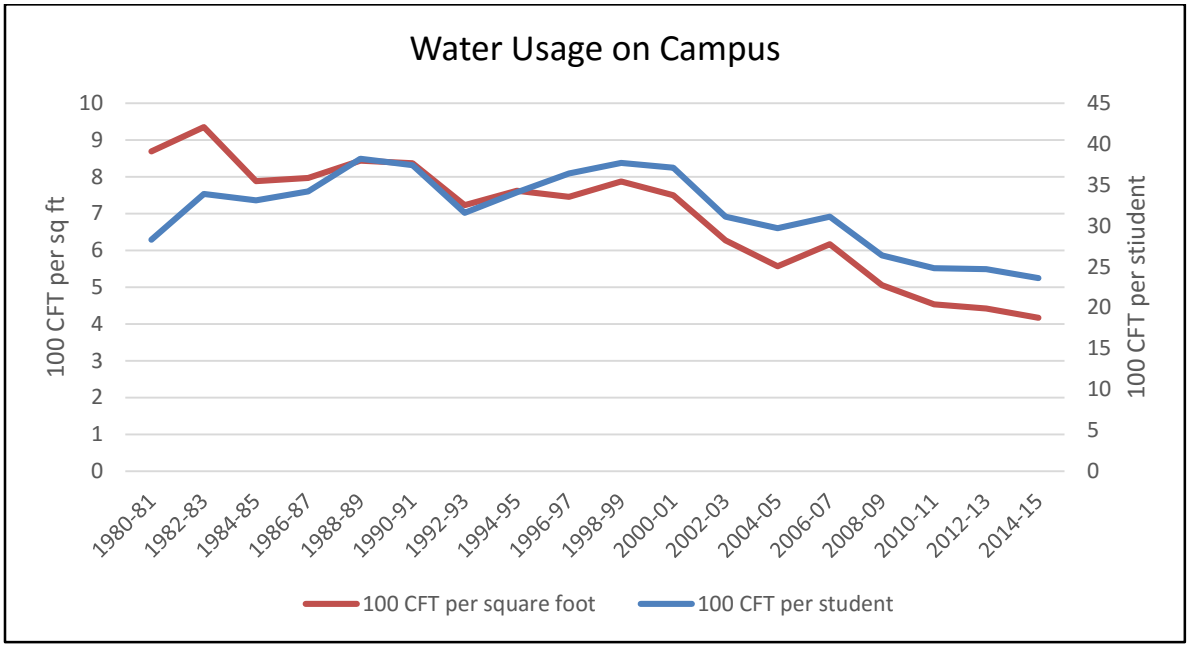
Water at UT Knoxville is used for toilets and urinals, drinking, showering, steam production, air conditioning, landscaping, washing dishes, and so forth. Water is supplied by KUB, which also supplies sanitary sewer service to campus. The amount of water used on campus peaked at the end of the 1990's. There has been a steady decrease in use since then. The drop in consumption has occurred despite continued growth in campus square footage and small increases in the number of students enrolled.

Water and Sewer Use

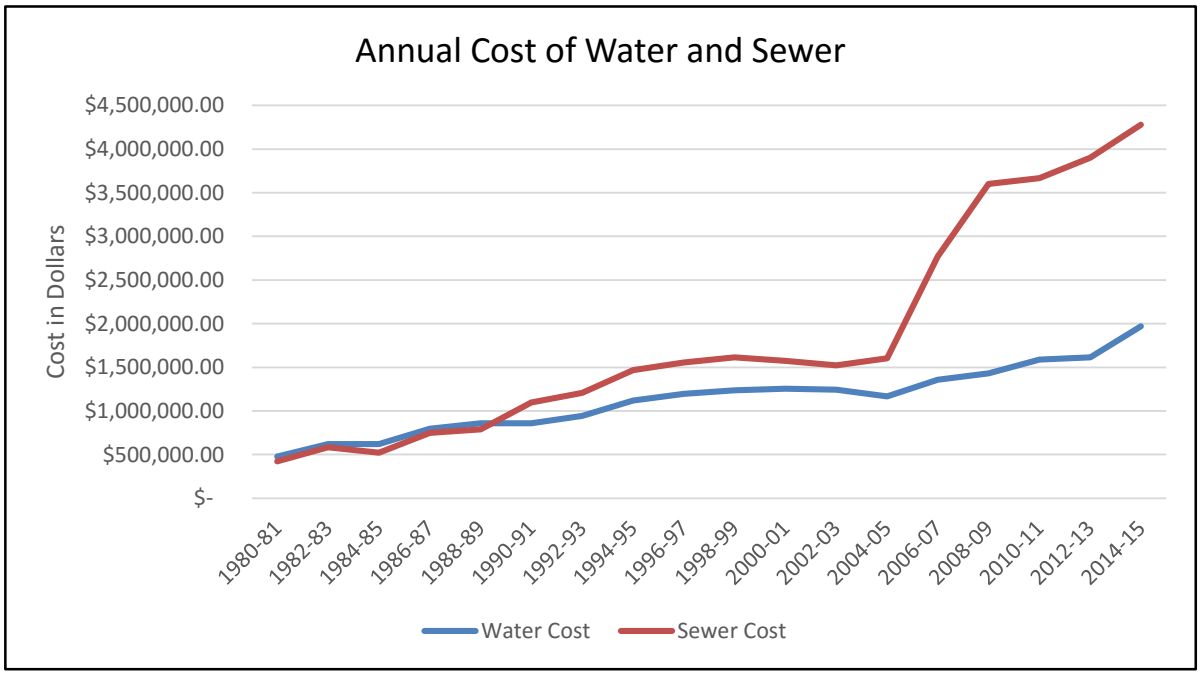
Water Use (100 Cubic Feet)									
	1979-80	1989-90	10-yr. Change	1999-00	10-yr. Change	2009-10	10-yr. Change	2014-15	5-yr. Change
Total	877,927	883,088	1%	985,542	12%	630,833	-36%	645,514	-8%
Per Student	28.9	35.3	22%	37.9	7%	23.3	-39%	23.6	-9%
Per Sq. Ft.	0.089	0.079	-11%	0.076	-4%	0.043	-43%	0.042	-14%



This chart illustrates the consistent decrease in water usage per student and campus square footage that is largely attributed to the university's push for installing water reducing/reusing technologies such as low flow installations, waterless urinals, and cisterns.



Sewer charges to UT Knoxville are based on the amount of water consumed, adjusted for water used for air conditioning and landscaping that ends up in the air or ground rather than in the sewer system. The cost to UT Knoxville for water has risen steadily until 2005-06; it was $1,214,421 in 1980-81 (adjusted to 2015 dollars) - where the price of service jumped to $3,256,441 (also adjusted to 2015 dollars). Since then the price has only increased to what the university now pays: $4,281,001. This drastic increase is due to service cost increases of 50% in April, 2005 and an additional 50% increase in January, 2007.



IV. Water Pollution

UT Knoxville campus is located in three watersheds –Second Creek, Third Creek, and Fort Loudon Lake Upper. Chemicals applied to landscaping, including fertilizers, herbicides, and pesticides, can be washed away and result in additional pollutant loads to these waterways. Nutrient pollution (nitrogen and phosphorus) is the second most important non-point source in Tennessee, and results in excessive eutrophication of many waterbodies. Eutrophication is caused by the rampant growth of algae, resulting in water cloudiness and low oxygen levels, both detrimental to aquatic life. For fertilizers, best management practices include soil testing to ensure proper amounts are applied, not applying if a heavy rain is expected in the next few days, and split applications (ie. once in the spring and once in the fall). In addition, the use of slow-releasing sources such as compost or the planting of leguminous winter cover crops that provide nitrogen are beneficial to the environment. To reduce and optimize the application of insecticides and other pesticides, pest and disease scouting and analysis can determine the most effective chemical to apply. Also, rotation of annual plants, removal of plant waste, and the use of plantings to promote beneficial insects are recommended.

These are all aspects of an integrated pest management plan. Herbicides, used to control weed growth, are especially detrimental to aquatic plants and must be used with caution. Alternatives to spraying include rotation of plants, and the use of mulch and cover crops. Whenever chemicals are to be used, great care should be taken to prevent them from being washed away in stormwater (*See also* "Landscaping"). Storm water run-off from impermeable surfaces such as roofs and paved parking lots, roads, and sidewalks can carry silt, oil, and chemicals into surface water and groundwater.

i. Storm water run-off: environmental improvements

UT Knoxville has a Storm Water Pollution Prevention Plan (SWPPP) that outlines procedures for managing storm water run-off at the Steam Plant (see "Milestones"). The Department of Environmental Health and Safety (EHS) conducts monthly and quarterly visual inspections, as well as an annual detailed chemical analysis, to identify and promptly correct potential issues related to storm water run-off from the plant.

In 2014 the University of Tennessee hired a stormwater coordinator in line with the requirements of operating a Phase II Municipal Separate Storm Sewer System (MS4). The primary goal of the stormwater coordinator is to improve and/or maintain the quality of surface waters by reducing the amount of pollutants in storm water as a result of continued urbanization. The stormwater coordinator developed a Stormwater Management Plan through the Stormwater Advisory Committee and the plan provides regulatory framework to ensure developments have minimal impact on the environment, promote low impact development to help protect our natural hydrologic cycle, manage our ever growing Stormwater Infrastructure, and engage our community through public participation and education outreach events.

Additional stormwater best management practices (BMPs) that campus and the stormwater coordinator has achieved and continue to recommend include: green roofs, the use of

permeable materials in new construction projects, and the use of cisterns in new buildings.

V. Solid and Hazardous Waste

ii. Solid waste

In the ten years leading up to 2003, UT Knoxville had seen a substantial decrease in the amount of solid waste – non-hazardous solid products such as paper, plastics, food, construction debris, and similar items – being disposed of in Class A landfills. The campus has experienced a slight increase in waste sent to Class A landfills to 2010 followed by another decrease in the past five years.

Waste Sent to Class A Landfill (tons)					
	1992-93	**2002-03**	**2009-10**	**2014-15**	**% Change from 2010**
Total	15,700	7,850	8,505	6,552	-23%
Per Student	0.61	0.29	0.31	0.24	-23%

Due to the growing composting and recycling programs, campus is sending slightly less solid waste to Class A, C, and D (construction and demolition, respectively) landfills, as shown by the table below:

Solid Waste per Fiscal Year (tons)								
	2008-09	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**% Change from 2010**
Class A Landfill	8,292	8,505	9,042	9,407	8,872	6,308	6,552	-23%
C & D	4,354	3,892	4,125	1,333	743	4,272	2,380	-39%
Total	**12,646**	**12,397**	**13,167**	**10,740**	**9,615**	**10,580**	**8,932**	-28%
Per Student	0.46	0.46	0.48	0.39	0.36	0.39	0.33	-29%

Continued reductions in the waste stream are likely, although not without future support to the composting and recycling programs on campus. UT Volunteer Dining has also bolstered efforts to curb solid waste disposal in Class A landfills with the introduction of trayless dining in residential restaurants. However, widespread use of non-reusable paper and plastic dishware in UT Knoxville dining service facilities remains an issue as well as the use of Styrofoam at many of the franchised dining locations.

iii. Hazardous waste

UT Knoxville purchases, uses, and must eventually dispose of small quantities of hazardous chemical waste, mainly through its science, engineering, and other research laboratory work on the main campus. The table below illustrates the total pounds of hazardous waste disposed on Main Campus from 2005-2015.

Hazmat Waste Disposed										
Fiscal Year	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**
In Pounds	46,304	52,217	57,643	59,954	43,585	47,358	47,130	66,771	53,572	43,722
In Tons	23	26	28.8	30	21.8	23.7	23.6	33.4	26.8	21.8

As shown in the table, there was a 7% increase in the volume of total waste disposed on the main campus between 2007 and 2008. This was due to a large scale one-time lab cleanout that occurred in February 2008. Furthermore, the 47% increase in total waste disposed from 2008-2009 resulted from a one-time demolition project in which approximately 15 tons of lead contaminated building materials were disposed. The volume of hazardous waste disposed of is very dependent on the research projects conducted on campus which is fairly unpredictable and uncontrollable. However, there are small improvements the campus has made in order to not irresponsibly dispose of the waste.

iv. Hazardous waste: environmental improvements

The UT Knoxville EHS department strives to promote pollution prevention and responsible waste disposal among the campus community. EHS maintains a Chemical Exchange Program, in which unused, unopened, unexpired chemicals are exchanged to other departments instead of being disposed. In addition, EHS implemented a Mercury Reduction Policy, in which the goal is to eliminate 80% of the nonessential mercury and mercury containing equipment from the Knoxville campus by 2015. That policy can account for the height of the hazmat waste disposed in 2012-2013 followed by the steady decrease in the years after.

VI. Procurement

Currently UT Knoxville does not have any campus wide procurement policies that use environmental criteria to guide the purchase of goods and services by UT Knoxville departments and contractors.

As of early 2011, 23 percent of the paper products carried by the UT Book and Supply Store were made from recycled content paper. The products are generally grouped together. However, further efforts to highlight the products can easily be implemented. The bookstore also purchases and distributes 6,000 reusable water bottles each year to spread recycling awareness.

VII. Motorized Transportation

*(*see also *X. Accommodations for Pedestrians and Bicycles)*

i. Private vehicles

Faculty, staff, and students use their own vehicles to make trips to, from, and around campus. Parking Services provided the following number of permits issued to UT Knoxville drivers for the 2014-2015 Fiscal year.

Parking Data	2014-2015
Student: Commuter	10,136
Student: Non-Commuter	4,228
Motorcycle	141
Faculty/Staff	4,575

In the last five years the combined ratio of permit sales to actual spaces is 1.2 : 1 for faculty and staff parking and 1.8 : 1 for student commuter and non-commuter parking. Over this timeframe the Knoxville campus has averaged 5,647 and 9,516 parking spaces for faculty/staff and students, respectively. The permit figures do not include special, vendor, or temporary permits, or off campus parking.

ii. Commuting Patterns

The last survey of UT Knoxville commuting patterns was conducted by the Office of Sustainability in the spring of 2010. Approximately 850 faculty, staff and students, or about 2.5 percent of the fall 2009 campus population, participated in the survey. Undergraduate students were underrepresented in the survey, so responses were weighted by campus group (undergraduate/graduate/faculty/staff).

The table below summarizes how survey respondents most often travel between campus and home:

2010 Fiscal Year Commuting Patterns						
Group	Drive Alone	Carpool	Ride the Bus	Motorcycle/ Moped	Bicycle	Walk
Faculty	79%	8%	7%	0%	5%	1%
Staff	83%	10%	3%	0%	2%	1%
Graduate	76%	9%	6%	0%	4%	5%
Undergraduate	58%	7%	5%	1%	10%	19%

Results from the 2010 commuting survey mirror those obtained from a fall 2004 survey conducted by the Knoxville Transportation Planning Organization (TPO). This survey, which had 4,439 responses, revealed that 74 percent of the campus community drives alone when commuting to campus. The fact that so many faculty, staff and students drive to campus is reflected in the growing demand for parking permits and spaces, as mentioned in the parking data above.

Another transportation survey was distributed in spring of 2016 but is still in the final stages of collection and analysis. Past surveys from 2010 – 2015 have been conducted, however new management within the Office of Sustainability has found numerous discrepancies and biases within the past surveys and subsequent results, therefore they are not included in this report.

iii. Mass transit vehicles

UT Knoxville contracts its mass transit operations on campus with First Transit as of June 2013, previously through Knoxville Area Transit (KAT). These operations include:

- 15 buses on dedicated campus routes
- 4 buses and 1 free trolley (Green and Orange lines) running to and from campus

In addition, First Transit operates a bus system that connects the Knoxville campus with other parts of Knoxville. First Transit currently operates all buses on biodiesel, which is a reduction in GHG total emissions for campus.

iv. Transportation Service vehicles

UT Knoxville Fleet Management, previously called the UT Knoxville Transportation Services Department is obligated to employ the following Tennessee state alternative fuel and fuel-efficient vehicle acquisition and use requirements:

> All state agencies, universities, and community colleges that have more than 10 state-owned vehicles in their fleet are required to incorporate alternative fuel, hybrid electric, or other fuel-efficient or low emission vehicles into their fleet in order to reduce or displace at least 20% of the fleet's consumption of petroleum by January 1, 2010. If the fleet includes vehicles modified for educational, emergency, or public safety purposes or vehicles used for emergency or law enforcement purposes, the fleet must provide for a minimum 10% petroleum use reduction.
>
> Further, state fleets are encouraged to make every effort to ensure that at least 30% of newly purchased motor vehicles are energy-efficient vehicles. Energy-efficient vehicles are defined as passenger vehicles that are: alternative fuel vehicles as identified by the Energy Policy Act of 1992 including those using ethanol, biodiesel, or other alternative fuel; hybrid electric vehicles; or conventional gasoline vehicles achieving an average fuel economy of at least 25 miles per gallon. State agencies should strive to use ethanol and biodiesel in appropriate state-owned vehicles whenever possible and should support the development of biofuels fueling infrastructure. The Tennessee Commissioner of General Services is required to compile and maintain information on motor vehicles owned and leased by the state including a categorization of vehicles by an energy-efficiency rating.
>
> (Source: Tennessee Code 4-3-1109, 4-22-101, and 4-22-102, and Executive Order 33, 2006)

The Knoxville campus fleet includes vehicles available for loan to faculty and staff, as well as, those used by Facilities Services. They include car, light-duty trucks, heavy-duty trucks, scooters, vans, mini-vans, police-cruisers, etc.

UT Knoxville Campus Fleet	
Total Vehicles	1017
Flex-Fuel Vehicle	514
Hybrid Electric	1
Electric	17

The number of alternative fuel vehicles purchased by Fleet Management has been steadily increasing over the years. At this time, there are plans to purchase additional hybrid electric vehicles in attrition with the removal of outdated vehicles. In addition, Fleet Management is installing GPS units across all campus vehicles to better understand fuel consumption, vehicle demands as well as potentially cut down fraud such as off campus trips not approved and idling (fuel waste).

VIII. "Green" Buildings

i. Sustainable Building Policy

The industry standard for green building design is the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) certification program. In 2007, UT Knoxville adopted a policy that requires new buildings costing more than $5 million and major renovations to meet current LEED certification as a minimum requirement under the LEED for New Construction and Major Renovations standard (http://environment.utk.edu/policy.html). Small scale renovations are required to utilize the LEED for Commercial Interiors rating system as applicable.

ii. LEED Buildings on Campus

In 2005 UT Knoxville was without any LEED-certified buildings. However, the campus now has 6 LEED Certified buildings. These buildings include Ayres Hall, the Natalie L. Haslam Music Center, Joint Institute of Advanced Materials, and the Student Health Clinic which have achieved LEED Silver Certification. Min Kao Electrical Engineering and Computer Science and the Joint Institute of Neutron Sciences have the standard LEED Certification.

iii. State Sustainable Design Standards

Many of the recent buildings constructed on campus now adhere to both the Tennessee's Sustainable Design Guidelines and the High Performance Building Guidelines. Most of the recommendations in these guidelines fall in line with the principles of LEED certification requirements. Since the creation of the SDG, the Student Union and Fred D Brown Residence Hall were constructed under the procedures recommended by the guideline.

IX. Landscaping

i. Grass mowing, leaf clean up and composting

Approximately 200 acres of UT Knoxville land are mowed. This includes grassy areas on the main campus, the agricultural campus, the University Club, the President's Residence, and 4848 Lyon's View Pike. However, the landscaping team is responsible for landscape maintenance and upkeep of about 600 acres of space on the Main and Agricultural campuses and an additional 200 acres at Cherokee Farms.

The campus is currently responsible for mowing all of the 200 acres, both on the main

campus and agricultural campus. This is substantial change since 2005, wherein all of the 200 acres were mowed by outside contractors. With this being said, its apparent the in house management of mowing has benefited campus as we mow on a need basis, ensuring areas of growing grass are not tampered with and can accommodate short term request such as outdoor events much faster.

ii. Compost

In fall 2003, UT Knoxville began composting or mulching all of UT Knoxville's fall leaf waste. The compost generated was used primarily for landscaping projects on University property. Between 2005 and 2007, the campus also started collecting coffee grounds from both Starbucks locations on campus. Additionally, in the summer 2010, pre-consumer food scraps were combined with the coffee for collection and composting. The scraps are mixed with the leaves and wood chips produced by campus tree trimming projects to produce compost.

Furthermore, in 2013 post-consumer compost became a regular practice at the Presidential Court Building by employees scraping food waste into compost bins before sending dishes to be cleaned. Starting in 2013 the Recycling Office also offered zero waste programs at catering events with the goal of having at least 90% waste diversion from the landfill at these events. This effort not only reduces waste on campus but also gives the opportunity to educate much of the faculty, staff and students on where their waste goes.

Now the composting program even benefits the Ag Campus by removing all animal wastes to the composting site. The practice first started in 2013 at the UT Farm Animal Hospital and has grown to include removal at both the Large Animal Veterinary Medical Center site and Brehm Animal Science Center.

In the past five years, the composting program has collected over 7,868,000 pounds of waste that would have otherwise gone to the landfill.

Fiscal Year	2010	2011	2012	2013	2014	2015
Total Compost Materials (Tons)	72.89	233.42	989.28	601.66	893.96	1142.9

The compost site, initially on Morgan Hill, has moved twice since 2005. Ongoing construction and expansion has pushed the site to its current one-acre location near the UT Medical Center.

iii. Arboriculture

Arboricultural Services was formed in 2015 to provide tree care and maintenance services to the entire University of Tennessee Knoxville campus. The new arborist will provide a more complete view on the canopy percentage of the campus while also providing advice on the best way to increase this number. This program benefits our GHG reduction efforts

in that each tree planted or maintained sequesters carbon annually. Through the data collection efforts from UT's arborist, we are able to quantify this offset again GHG emissions campus wide as well as provide insight into energy saving potential when constructing/renovating buildings across campus (shade increases reduces energy load).

X. Green Spaces; Accommodations for Pedestrians and Bicyclists

i. Walkways and Greenspace

Bicycling and pedestrian conditions on campus were improved with the completion of the pedestrian walkway. This vehicle-free pathway provides bicyclists and pedestrians with a safe, convenient route from the Hill to Andy Holt Avenue. In the updated 2016 version of the Campus Master Plan, there are designs in place to expand this walkway all the way to 20th street to further safe pedestrian access to residence halls and other campus buildings. Several green spaces were created with the first phase of construction of the mall and pedestrian walkway and more will be created with the continuation of this project.

ii. Bicycle Lanes

Bicyclists also were provided with a bicycle lane along Joe Johnson and Andy Holt Avenue. This connects the pedestrian walkway to the Third Creek greenway entrance on the Ag Campus. This provides a safe and easy way for students, faculty, and staff to commute to and around campus.

iii. Campus Master Plan 2016

Bicycle access to the campus has improved some since the 2011 report and the green space has been slightly reduced. However, the draft 2016 Master Plan contemplates major improvements, including the following:

- Covered bike hoops in the Lake Avenue Garage
- Bike Repair Stations are now a Site Standard
- Runnels along sidewalks for walking a bicycle
- More connections to the Neyland Greenway
- Pedestrian Walkway extension to 20th Street
- Demolishing HYPR building for green space
- Extension of green space from the mound to the UT Gardens
- Redesign of Volunteer Boulevard that includes sharrows for bikes and cars and a median with bioswales

XI. Student Involvement

i. SPEAK

Students have provided one of the most important contributions to sustainability at UT Knoxville. In the early 2000's, Students Promoting Environmental Action in Knoxville (SPEAK) initiated an SGA referendum that established the environmental portion of the Student Environmental Facilities Fee (see "Milestones" and "Development Efforts"). Since the fall of 2005, this fund has supported an impressive array of campus sustainability projects, which are listed in Appendix B.

ii. Eco Vols

Eco Vols, originally called Hall Vols, is a student group run out of the Office of Sustainability and is the student group tasked with ensuring residences in our various residence halls are participating in recycling, energy campaigns and events throughout campus. In 2016, Eco Vols has absorbed Project VEGGIE student group to better manage the student ran garden on campus.

iii. Additional Student Groups

a. Smokey's Pantry
    i. Smokey's Pantry is the first food pantry at the UT Knoxville. The pantry is a collaboration between the student government, Tyson House (the Lutheran and Episcopalian Campus Ministry), FISH Pantry, and also with support from the Office of Student Life and Office of Sustainability to provide free food items to those in need in an anonymous manner.
b. Food Recovery Network
    i. In agreement with Dining Services to recover from campus POD markets, athletic events, university dining halls and small events. All food recovered is donated to the Second Harvest Food Bank of East Tennessee, which serves over 18 counties in the East Tennessee area--primarily Knox County.
c. Nourish
d. SGA Environment and Sustainability Committee
e. Progressive Student Alliance
f. Nourish Internationalhttp://nourish.org/students/utk/
g. Environmental Law Organization
h. Alternative Breaks

XII. Greenhouse Gas Emissions

i. ACUPCC

As a signatory of the American College and University Presidents' Climate Commitment (ACUPCC), UT Knoxville is taking action to reduce, and eventually eliminate or offset,

campus greenhouse gas (GHG) emissions. Campus GHG emissions steadily increased from fiscal year 1990-91 to 2004-05. Between fiscal year 2004-05 and 2008-09, however, total emissions have decreased by nine percent – despite a seven percent increase in campus building space. As of the 2014-15 fiscal year, the campus is still at a decline, 2.3% less than in 2008-09. This suggests that Facilities Services is operating campus facilities more efficiently, and that faculty, staff and students are taking steps to reduce their carbon footprints.

ii. Emission Sources

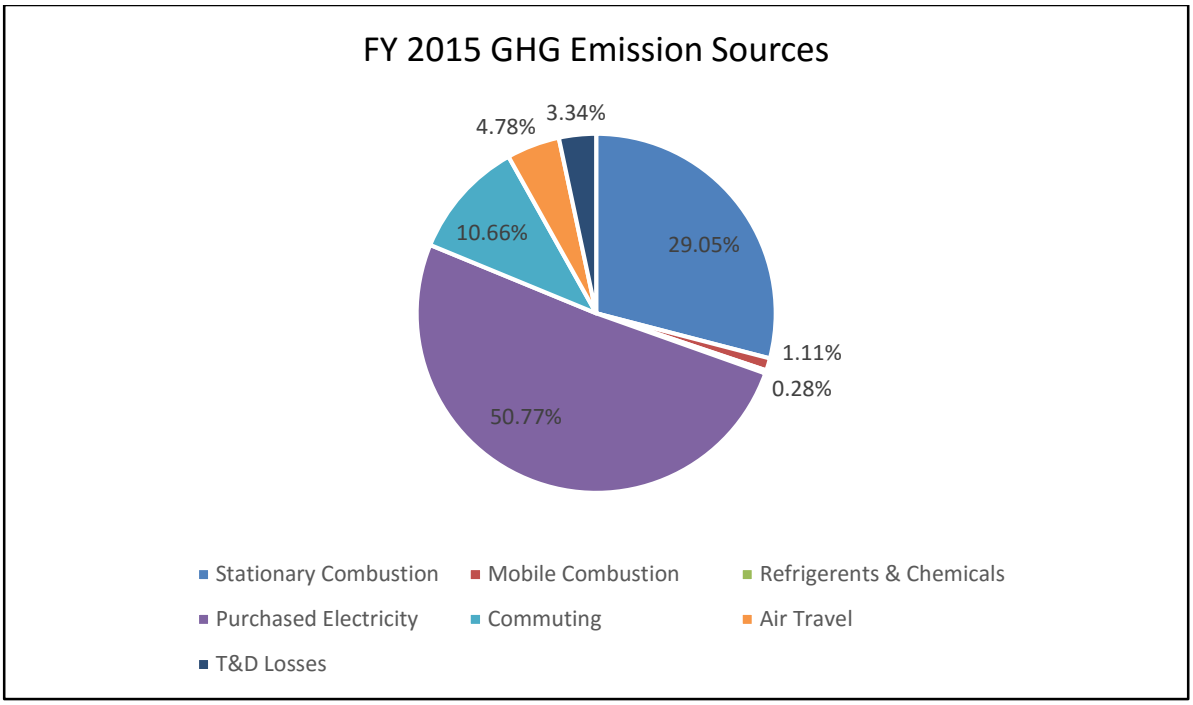
Key findings from the UT Knoxville fiscal year 2014-15 GHG emissions inventory:

- **Scope 1 Emissions:** Scope 1 emissions represent about 30% of campus' GHG emissions. For UTK, Scope One emissions include electricity and heating from the on-campus stationary Steam Plant, campus fleet emissions, refrigerants and chemicals, and fertilizer application.

- **Scope 2 Emissions:** Scope 2 emissions remain the largest contributor to UT Knoxville's emission profile, accounting for approximately 50% of GHG emissions. These off-campus emissions are attributable to fossil fuels burned to provide the university with electricity. Since fiscal year 2004-05, Scope 2 emissions have remained relatively constant.

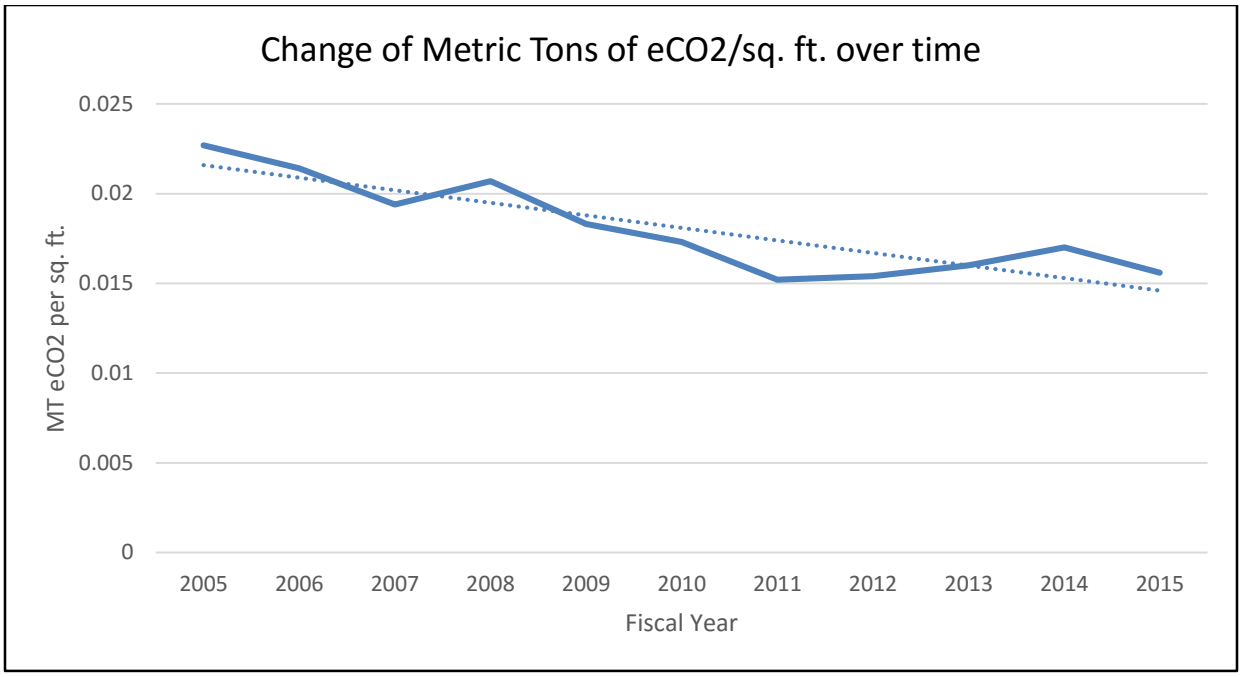
- **Scope 3 Emissions:** Historically, Scope 3 (commuting, air travel and T&D losses) emissions have comprised around 18% of UT Knoxville's total GHG emissions. The vast majority of Scope 3 emissions are attributable to faculty, staff and students commuting to campus.

The graph below depicts the percentage of total greenhouse gas impact emission sources.



iii. GHG Emission Progress

The next table shows the progress made in reducing the campus's greenhouse gases since 2005. A note should be made that our GHG reports have become more detailed since 2009 and we now have a more complete view of commuting and air travel than in the past. So the additional and more in depth data collection efforts account for the slight rise in GHG emissions in 2014, which we had not accounted for in the past. The square footage is total building square footage and not campus square footage.



iv. Future Weather Patterns

While the Climate Action Plan (see "Milestones") focuses on measures aimed at reducing or offsetting UT Knoxville's carbon footprint, campus planning efforts must also take into account the need to adapt to climatic changes that we cannot prevent. Many universities, especially those in climate-sensitive areas, are now engaged adaptation planning. There is a good bit of speculation regarding potential increases in violent weather (e.g., hailstorms or tornadoes), but current evidence is insufficient to either confirm or refute such a tendency. Given the uncertainty, prudence would recommend consideration of this possibility in campus planning. Climate models do however, clearly predict two trends over the coming decades for the southeastern United States:

1. More intense and frequent heat waves and
2. Intensification of summer rainfall variability, increasing the likelihood of both anomalously wet and anomalously dry summers.[4]

Landscaping and building plans should take these predictions into account where economically feasible.

[4] http://www.redorbit.com/news/science/1939473/climate_change_linked_to_variable_southeast_summer_rainfall/index.html

XIII. Development Efforts

UT Knoxville's most successful green development effort was initiated by students. The environmental portion of the Student Environmental Initiatives Facilities Fee (see "Milestones", above) was initiated in 2004 by an SGA referendum and currently generates $10 per semester for full-time in-state students and $30 per semester for full-time out-of-state students. Since its inception in fall 2005 it has raised more than $2.4 million for sustainability projects at UT Knoxville (see Appendix B for a list of the many projects it has funded).

Also in 2005, the Office of Development created at the request of the Committee on the Campus Environment a companion fund, the Campus Environmental Stewardship Fund, to accept donations from faculty, staff, alumni and other donors, including corporate donors. However, this fund has to date raised only $18,000, mainly from faculty and staff. Some of that money was spent to provide the Recycling Office with Humming Bikes; battery powered bikes with trailers that allow staff to get around campus for events and meetings without producing emissions.

Many public universities, particularly those among the top 25, have been more successful in creating funding for sustainability projects from corporate and alumni donations. For example, at the University of Pittsburgh cumulatively since 1997, over 900 donors have contributed more than $33 million to 60 funds focused on green or sustainable efforts (http://www.greenreportcard.org/report-card-2011/schools/university-of-pittsburgh/surveys/campus-survey#funding.)

There are several ways to promote and improve the Campus Environmental Stewardship Fund:

Encourage investment in specific projects. One of the most effective ways to improve the fund may be to highlight specific projects to which corporate or alumni donors can contribute—for example, a major solar or wind energy initiative, a green roof project or green spaces on campus. Some donors may wish to fund enduring institutions. A good example is the Graham Environmental Sustainability Institute at Michigan State (http://www.graham.umich.edu/about/donor.php).

Recognize donors UT Knoxville can encourage donors by giving them recognition for being green. For example, at the University of Pittsburgh:

> "The Office of Institutional advancement will begin to annually recognize donors who make charitable contributions to green initiatives at the University of Pittsburgh through the recently established Blue Gold and Green Honor Roll. The list will be published annually on Earth Day (April 22) on the Pitt Giving Web site. This unique honor roll will be created with the goal to steward Pitt donors who "think green", and with the hope that it will encourage others to consider supporting the various green research and educational

initiatives at the University of Pittsburgh."[5]

XIV. Food

Food is our last environmental indicator and was added during the update process during the spring of 2016. With this in mind, we lack many data points and overall trends to provide an update on how sustainable our food operations and offerings are here at UT. The below categories will be updated over the next five years and by the 2021 report, this section will be populated with information showing trends and specific achievements within the food recommendation category.

i. Sustainable Dining
    a. This section will dive into the various data points involved with our dining operations (dining halls, catering, events, etc.) such as energy consumption, food offerings (local, organic, non-GMO, fair trade, etc.), waste diversion and purchasing.

ii. Marketing/Outreach
    a. This section will discuss the outreach and marketing program ran by Aramark and the Office of Sustainability to not only inform campus population about sustainable options within dining, but also ways to adopt a healthier lifestyle through healthy eating. In addition, this section will highlight the campaigns to raise awareness of the sustainable operations in place.

iii. Engagement
    a. Probably our smallest section, this will be were engagement activities will be listed and their impact to sustainable food on campus. Such examples might include trips to local community gardens or a workshop held by nutrition professors to raise awareness of healthy eating in Knoxville.

APPENDICES

Appendix A:
Past UT Knoxville Environmental Reports

1970 Report of the Self-Study Committee on the University and the Environment

5 http://www.greenreportcard.org/report-card-2011/schools/university-of-pittsburgh/surveys/campus-survey

The first environmental report on UT Knoxville dates back to 1970. On July 9 of that year a faculty "Self-Study Committee on the University and the environment" chaired by W. L. Shouse issued a report recommending a number of environmental improvements. The purpose of the recommendations was to make the University of Tennessee "a model Environment for its own people, the larger community, and the state." While this report did not summarize data, its recommendations are worthy of note. These were:

1. Eliminate the use of Styrofoam and plastic objects which are not biodegradable.
2. Use biodegradable cleaners and other products.
3. Recycle paper and other waste products.
4. Cut down on excessive consumption (paper and other supplies).
5. Eliminate air pollution sources on campus.
6. Promote non-polluting mass transportation systems.
7. Eliminate non-service vehicles from the campus area and provide peripheral parking for commuters.
8. Provide green spaces and malls on campus.
9. Acquire natural landscapes on the campus periphery.
10. Unify student and community services (legal aid clinic, psychology clinic, counseling center, financial aids, etc.)
11. Encourage departmental cooperation in interdisciplinary courses through adequate funding, consideration of faculty work load, promotions, and raises.
12. Involve all segments of the University community in creating this model Environment.
13. Encourage good teaching by equating it with the gains from good research.

Forty-one years later, many of these recommendations have been or are being implemented but others (e.g. eliminate air pollution sources on campus) still need solutions. The report concludes:

> In order to effectuate the … recommendations, it will be necessary to set up an ongoing committee on the Environment. This committee's functions would include investigating implementation procedures for both the general and specific recommendations made, expanding these recommendations in the light of future data and resources, and working with other Environmentally concerned committees already in existence (for example, the Architectural Review Board) in order to coordinate and give direction to future campus plans.

Today the Committee on the Campus Environment fills this role.

The Greening of Big Orange

During the late 1990s, two undergraduates, Mary Anne Peine (now Mary Anne Hitt) and Jamie Pizzirusso, mentored by John Nolt, did a College Scholars project for which they created an ambitious report entitled *Environmental Blueprint for the Twenty-First Century: The Greening of Big Orange*. Their report was completed in spring 1997 and presented to Chancellor Bill Snyder in a revised version in spring 1998. It documented environmental conditions and policies on campus, compared them with conditions and policies at other universities, and issued numerous specific recommendations under the following headings:

- A University Environmental Policy Solid Waste and Recycling Radioactive and

Hazardous Waste Energy
- Purchasing Policy
- Landscaping, Grounds Maintenance and Campus Design
- Transportation
- Education

It was partly in response to *The Greening of Big Orange* that Chancellor Snyder created the Committee on the Campus Environment in 1999 and charged it with, among other things, the task of recommending an environmental policy for the Knoxville campus.

The *Greening of Big Orange* report concludes:

> The next step of this process is implementation. … At least two paid professionals need to be hired to coordinate efforts for waste reduction and recycling, energy efficiency, transportation and land planning, and landscaping and campus design. … The possibility of using activities fee money as a source of funds for environmental initiatives should be explored.

With the creation of the full-time positions of Sustainability Manager and Environmental Coordinator, and the establishment of the Student Environmental Fee, these goals have been achieved.

2005 Environmental Progress Report

In 2005 the Committee on the Campus Environment, co-chaired by Mary English and John Nolt produced its first Environmental Progress Report:

http://www.cce.utk.edu/documents/05progressreport.pdf

This report provided a synopsis of environmental stewardship on the Knoxville campus as of 2004, including:

- baseline information on various environmental indicators, with additional information on areas where environmental progress is being made;
- a synopsis of how other universities are fulfilling their roles as environmental stewards, and
- suggestions for ways in which UT Knoxville could continue to improve its environmental stewardship on campus.

2007 Sustainable Building Policy

September 11, 2007

The University of Tennessee, Knoxville recognizes the importance of energy efficiency and sustainable design for campus buildings. Sustainable design considers human and environmental health along with economic and social concerns within the design, construction, and renovation process. As a member of the United States Green Building Council The University of Tennessee acknowledges the Leadership in Energy and Environmental Design (LEED™) rating system as the nationally accepted sustainable building standard (http://www.usgbc.com).

Campus structures are designed with a long life expectancy. The lifetime maintenance of building materials and systems (life cycle costs) should be considered along with capital cost in new constructions and major renovations.
In accordance with the principles of the campus Environmental Policy The University of Tennessee, Knoxville shall use the United States Green Building Council's Leadership in Energy and Environmental Design (LEED™) rating system as the standard for the design and construction of new buildings costing more than $5 million and major renovations. All such projects shall be designed to meet current LEED certification as a minimum requirement under the LEED for New Construction and Major Renovations (LEED-NC) standard.

Small scale renovations shall utilize the LEED for Commercial Interiors (LEED-CI) rating system as applicable.
Architects, contractors, engineers, and all others involved with the building design process are expected to follow this policy. In addition to following LEED criteria, building planning teams should provide a building operation life cycle cost as early as possible in the design process to the Chancellor’s staff for review.

Appendix B:
Projects Funded by Student Environmental Fee since its Inception in 2005

Year 1 **FY 2005-06**

Revenue: $383,372

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$144,000	$120,000	Complete	
Stokely Management Center Lighting Upgrade	$125,000	$125,000	Complete	
High Efficiency Lighting Fixtures	$20,000	$25,531	Complete	
Lighting Motion Sensors	$5,000	$5,000	Complete	
Steam Valve Controls	$13,000	$13,000	Complete	
Low Flow Plumbing Fixtures	$20,000	$20,000	Complete	
Boiler Firing Controls	$8,000	$300	Complete	
Hybrid Vehicle Purchase	$12,000	$12,000	Complete	
Energy Efficient Electric Motors	$20,000	$5,218	Complete	
Hand Dryer Pilot Project	$8,000	$7,907	Complete	
Student Renewable Energy Conference	$25,000	$23,958	Complete	
Recycle Baskets in Student Housing Rooms	$15,000	$16,852	Complete	
Computer Recycling at Student Housing Move Out	$3,000	$862	Complete	
Purchase Additional Lighting Motion Sensors	$7,000	$7,000	Complete	
Totals:	$425,000	$382,628		

Balance: $744

Year 2 **FY 2006-07**

Balance forward:	$744
Revenue:	$418,144
Budget:	$418,888

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$144,000	$144,000	Complete	
Stokely Management Center Lighting Upgrade	$125,000	$125,000	Complete	
Steam Valve Controls	$13,000	$13,000	Complete	
Lighting Motion Sensors	$5,000	$5,003	Complete	
Hybrid Vehicle Purchase (Electric)	$16,000	$16,000	Complete	
GAs For Student Success Training and Other	$25,000	$25,000	Complete	
Earth Week Support (In with Education & PR Support)	$10,000	$0	Complete	
Hydrogen Fueled Vehicle	$25,000	$25,000	Complete	
Compact Fluorescent Lamp Swap	$8,000	$5,016	Complete	
Education & PR Support	$5,000	$3,217	Complete	
Make Orange Green Rollout	$20,000	$12,326	Complete	
AASHE Membership	$1,500	$1,500	Complete	
Make Orange Green Switchplates	$8,000	$7,964	Complete	
Electronics Recycling	$6,000	$0	Complete	
High Efficiency Lighting Fixtures & Lighting Motion Sensors	$33,297	$25,150	Complete	
Totals:	$444,797	$408,176		
Balance:		$10,712		

Year 3 **FY 2007-08**

Balance forward:	$10,712
Revenue:	$424,233
Budget:	$434,945

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$144,000	$144,000	Complete	
Stokely Management Center Lighting Upgrade	$125,000	$125,000	Complete	
Steam Valve Controls	$13,000	$1,212	Complete	
Benefits and Tuition for GAs	$15,000	$22,867	Complete	
Hybrid Vehicle Purchases	$32,000	$8,484	Complete	
AASHE Membership	$1,500	$1,500	Complete	
Compact Fluorescent Lamp Swap	$5,000	$4,992	Complete	
Electronics Recycling	$6,000	$0	Complete	
Earth Week Support	$10,000	$19,578	Complete	
Make Orange Green (was Education & PR) Support	$6,000	$0	Complete	
Make Orange Green Week Support (Fall Event)	$12,000	$0	Complete	
Communications TV Studio Lighting Upgrade	$75,000	$66,183	Complete	
Totals:	$444,500	$393,816		
Balance:		$41,129		

Year 4 **FY 2008-09**

Balance forward:	$41,129
Revenue:	$421,104
Budget:	$462,233

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$144,000	$144,000	Complete	
Stokely Management Center Lighting Upgrade	$125,000	$125,000	Complete	
Steam Valve Controls	$13,000	$0	Complete	
Graduate Assistants	$50,000	$24,168	Complete	
AASHE Membership	$1,500	$1,500	Complete	
Compact Fluorescent Lamp Swap	$7,000	$5,104	Complete	
MOG Education, Publicity, & Support	$20,000	$17,583	Complete	
Recycle Bins for New Residence Halls	$4,000	$7,000	Complete	
Green Roofs	$50,000	$20,021	Cancelled	Cancelling where it is
Tailgate Recycling Bins	$5,300	$5,280	Complete	
Humanities Recycling	$5,000	$4,716	Complete	
Light Switch Plates	$10,000	$9,912	Complete	
Motion Sensor Light Switches	$10,000	$8,831	Complete	
Recycling Bins for Offices	$24,000	$23,971	Complete	
Compost Equipment for Students	$5,000	$0	Cancelled	
Totals:	$473,800	$397,086		
Balance:		$65,147		

Year 5	**FY 2009-10**
Balance forward:	$65,147
Revenue:	$548,887
Budget:	$614,034

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$144,000	$144,000	Complete	
Stokely Management Center Lighting Upgrade	$125,000	$9,666	Complete	
Graduate Assistants	$50,000	$38,949	Complete	
AASHE Membership	$1,500	$1,500	Complete	
MOG Education, Publicity, & Support	$60,000	$14,121	Complete	
Recycling Equipment	$102,000	$70,746	Complete	
Photovoltaic Systems (1 of 4)	$100,000	$0	Postponed	Design in progress
Bicycle Program	$12,000	$10,928	Complete	
Water Dispensers	$10,000	$0	Cancelled	
Relocate Solar Display ($3K matching/McKinney)	$25,000	$18,431	Will relocate	
Low Flow Plumbing Fixtures	$40,000	$37,762	Complete	
Vet School Library Lighting	$75,000	$48,675	Complete	
Student Competition	$30,000	$10,692	Complete	
Additional Green Power Purchase	$36,000	$36,000	Complete	
Student Workers	$8,000	$4,885	Complete	
Taylor Law Low Flow Plumbing Fixtures	$65,000	$63,842	Complete	
Timers for Water Heaters and Small HVAC	$30,000	$27,965	Complete	
Totals:	$913,500	$538,162		
Balance:		$75,872		

Year 6	**FY 2010-11**
Balance forward:	$75,872
Revenue:	$557,123

Budget:	$632,995	

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$216,000	$216,000	Complete	
Graduate Assistants	$50,000	$53,098	Complete	
AASHE Membership	$1,500	$1,670	Complete	
MOG Education, Publicity, & Support	$60,000	$30,006	Complete	
Photovoltaic Systems (2 of 4)	$100,000	$0	Postponed	Design in progress
Electric Bike PV System	$15,000	$15,000	Complete	
Living Light - Solar Decathlon	$40,000	$40,000	Complete	
Recycling Support	$58,000	$48,295	Complete	
Steam Line Insulation	$40,000	$27,512	Complete	
Cooling Tower VFDs	$40,000	$40,000	Complete	
Low Flow Aerators for Faucets	$3,000	$2,807	Complete	
Low Flow Plumbing Fixtures	$40,000	$27,158	Complete	
Hodges Library Bottle Stations	$700	$618	Complete	
Dining Services Ozzi Machine	$5,800	$0	Cancelled	
Organic Crops Farmers Market	$15,000	$15,000	Complete	
Exterior Lighting Upgrades - Building Mounted	$50,000	$0	Cancelled	
Steam System Flash Tanks	$20,000	$0	Cancelled	
Electric Vehicle Project Support	$100,000	$32,748	Complete	
Bottle Filling Stations	$47,000	$14,873	Complete	Reduced in scope
Computer Room Energy Improvements	$20,000	$0	Cancelled	
Solar Combination Project	$147,000	$0	Cancelled	
Low Impact Development	$2,000	$2,000	Complete	
Totals:	$1,071,000	$566,785		
Balance:		$66,210		

Year 7		**FY 2011-12**		
Balance forward:		$66,210		
Revenue:		$766,661		
Budget:		$832,871		
	Budgeted Amount	**Actual Cost**	**Project Status**	**Comments**
Green Power Purchase	$216,000	$216,000	Complete	
Graduate Assistants (1 of 3)	$72,000	$72,000	Complete	At work
AASHE Membership	$1,670	$1,720	Complete	
MOG Education, Publicity, & Support	$60,000	$25,795	Complete	
Photovoltaic Systems (1 of 4)	$100,000	$100,000		Design in progress
Living Light - Solar Decathlon	$15,000	$15,000	Complete	
Steam Line Insulation (1 of 5)	$40,000	$0	Cancelled	
Low Flow Plumbing Fixtures (1 of 5)	$40,000	$0	Cancelled	
AmeriCorps Volunteers	$15,000	$12,600	Complete	
Grinder for Recycling (Contingent on NR11 match)	$130,000	$0	Cancelled	
GA for Media Relations to Support MOG/SWT	$27,000	$27,000	Complete	
Volunteer Vine grant	$1,500	$1,137	Complete	
Student Internships (Six students) (1 of 5)	$30,000	$23,175	Complete	
Totals:	$748,170	$494,427		
Balance:		$338,444		
Year 8		**FY 2012-13**		

Balance forward:	$338,444	
Revenue:	$773,473	
Budget:	$1,111,917	

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$216,000	$216,000	Complete	
Graduate Assistants (2 of 3)	$72,000	$72,000	Complete	At work
AASHE Membership	$1,720	$1,720	Complete	
MOG Education, Publicity, & Support	$25,000	$17,919	Complete	
Photovoltaic Systems (2 of 4)	$100,000	$100,000		
Living Light - Solar Decathlon	$15,000	$15,000	Complete	
Steam Line Insulation (2 of 5)	$40,000	$0	Cancelled	
Low Flow Plumbing Fixtures (2 of 5)	$40,000	$0	Cancelled	
AmeriCorps Volunteers	$20,200	$6,823	Complete	
Student Internships (Six students) (2 of 5)	$30,000	$11,538	Complete	
Revolving Fund	$50,000	$50,000		
Exterior Lighting Upgrades - Building Mounted	$50,000	$50,000		
Steam System Flash Tanks	$20,000	$20,000		
Bottle Filling Stations (1 of 5)	$20,000	$2,714	Complete ($17286 to FY 14)	
Steam Line Insulation (1 of 5)	$40,000	$0	Complete ($40000 to FY 14)	
Low Flow Plumbing Fixtures (1 of 5)	$40,000	$0	Complete ($40000 to FY 14)	
TVA Willdan Grant	$3,600	$3,600		
AASHE 2013 Conference Sponsorship	$5,000	$5,000	Complete	
Bottle Filling Stations Maintenance	$20,000	$0		
Geothermal Survey	$50,000	$0	Cancelled	
Totals:	$858,520	$572,314		

Balance:	$539,603

Year 9 FY 2013-14

Balance forward:	$539,603
Revenue:	$782,223
Budget:	$1,321,826

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$250,000	$267,324	Complete	
Graduate Assistants (3 of 3)	$72,000	$37,500	Complete	
AASHE Membership	$1,720	$1,720	Complete	
MOG Education, Publicity, & Support	$40,000	$40,000	Complete	
Steam Line Insulation (3 of 5)	$40,000	$0	Cancelled	
Low Flow Plumbing Fixtures (3 of 5)	$40,000	$0	Cancelled	
Student Internships (Six students) (3 of 5)	$30,000	$30,376	Complete	
Photovoltaic Systems (3 of 4)	$100,000	$100,000		
Bottle Filling Stations (2 of 5)	$37,286	$16,213	Complete	($21073 to FY 15)
Steam Line Insulation (2 of 5)	$80,000	$28,080	Complete	($51920 to FY 15)
Low Flow Plumbing Fixtures (2 of 5)	$80,000	$0	Complete	($80000 to FY 15)
AmeriCorps Volunteers (1 of 5)	$20,000	$29,670	Complete	(-$9670 to FY 15)
Bottle Filling Stations Maintenance	$20,000	$0	Complete	
Travel and Attendance for AASHE 2013 Conference	$15,000	$6,101	Complete	
Recycling Support	$20,000	$11,049	Complete	
Capstone Geothermal Project Support	$20,000	$0	Not needed	
TRECS Bicycle Program Bicycles and CLAMP	$19,000	$17,465	Complete	
VEGGIE Materials	$1,001	$0	Cancelled	
2014 Revisioning Sustainability Conference	$5,670	$5,670	Complete	

Student Conferences	$25,000	$25,000	Complete	
Revolving Fund	$100,000	$100,000	Complete	
John Luther Adams Visit	$3,500	$3,500	Complete	
Totals:	$1,020,177	$719,668		
Balance:		$602,158		

Year 10 FY 2014-15

Balance forward:	$602,158
Revenue:	$801,778
Budget:	$1,403,936

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$250,000	$249,324	Complete	
AASHE Membership	$1,720	$450	Complete	
MOG Education, Publicity, & Support	$40,000	$40,000	Complete	
Steam Line Insulation (4 of 5)	$40,000	$0	Cancelled	
Low Flow Plumbing Fixtures (4 of 5)	$40,000	$0	Cancelled	
Student Internships (Six students) (4 of 5)	$30,000	$30,057	Complete	
Photovoltaic Systems (4 of 4)	$100,000	$100,000		
Bottle Filling Stations (3 of 5)	$41,073	$12,271	Complete	($3787 from FY 14)
Steam Line Insulation (3 of 5)	$91,920	$0	Complete	($51920 from FY 14)
Low Flow Plumbing Fixtures (3 of 5)	$120,000	$0	Complete	($80000 from FY 14)
AmeriCorps Volunteers (2 of 5)	$34,330	$23,170	Complete	(-$9670 from FY 14)
Bottle Filling Stations Maintenance	$20,000	$0	Complete	
Recycling Support	$20,000	$17,049	Complete	

Revolving Fund		$300,000	$300,000	Complete
	Totals:	$1,129,043	$772,321	
	Balance:		**$631,615**	

Year 11 FY 2015-16

Balance forward:	$631,615
Revenue:	$700,000
Budget:	$1,331,615

	Budgeted Amount	Actual Cost	Project Status	Comments
Green Power Purchase	$250,000	$250,000		
AASHE Membership	$1,720	$1,720		
MOG Education, Publicity, & Support	$40,000	$40,000		
Steam Line Insulation (5 of 5)	$40,000	$0	Cancelled	
Low Flow Plumbing Fixtures (5 of 5)	$40,000	$0	Cancelled	
Student Internships (Six students) (5 of 5)	$30,000	$30,000		
Bottle Filling Stations (4 of 5)	$48,802	$48,802		($28802 from FY 15)
Steam Line Insulation (4 of 5)	$131,920	$131,920		($91920 from FY 15)
Low Flow Plumbing Fixtures (4 of 5)	$160,000	$160,000		($120000 from FY 15)
AmeriCorps Volunteers (3 of 5)	$45,490	$45,490		($1490 from FY 15)
Bottle Filling Stations Maintenance	$20,000	$20,000		
Recycling Support	$20,000	$20,000		
Food Pantry	$1,000	$1,000		
Tree Plantings	$20,000	$20,000		
Sensing for Sustainability	$36,320	$36,320		

Rain Gardens		$21,000	$21,000
Green Revolving Fund Contribution		$0	$0
Student Design/Research Fund		$40,000	$40,000
Student Conference Fund		$25,000	$25,000
	Totals:	$971,252	$891,252
	Balance:		$440,363

Appendix C:
Comprehensive Table of Historical Consumption Coal, Electricity, Natural Gas, Water, etc.

Fiscal Year	Number of Students	Square Footage	Coal		Electricity					Water & Sewer				
			Tons	Cost	Purchased KWH	Generated KWH	Total KWH	Purchased Cost	KWH /SFT	100 CFT	Water Cost	Sewer Cost	W&S 100 CFT/SFT	W&S Cost /100 CFT
1979-80	30,391	9,872,974	30,605	$828,315	127,037,382	0	127,037,382	$3,634,031	12.9	877,927	$410,477	$378,016	0.089	$0.898
1980-81	30,282	9,872,974	29,938	$1,096,178	130,616,885	0	130,616,885	$4,473,078	13.2	857,819	$478,229	$422,199	0.087	$1.050
1981-82	28,709	9,913,265	29,576	$1,221,035	136,486,191	0	136,486,191	$5,255,613	13.8	875,353	$533,393	$479,990	0.088	$1.158
1982-83	27,321	9,913,265	29,546	$1,167,963	134,041,248	0	134,041,248	$5,432,839	13.5	927,258	$619,939	$583,976	0.094	$1.298
1983-84	26,718	9,866,910	29,293	$1,065,345	136,192,800	0	136,192,800	$5,764,420	13.8	877,155	$621,829	$543,453	0.089	$1.328
1984-85	25,619	10,763,275	29,128	$1,060,108	138,314,242	0	138,314,242	$5,978,932	12.9	848,323	$621,407	$523,191	0.079	$1.349
1985-86	24,870	10,861,141	27,862	$934,845	142,442,288	0	142,442,288	$6,365,879	13.1	858,927	$658,694	$684,332	0.079	$1.564
1986-87	25,290	10,853,010	28,740	$948,199	151,983,085	0	151,983,085	$7,064,690	14.0	864,943	$796,766	$750,532	0.080	$1.789
1987-88	25,349	10,934,870	29,473	$967,402	158,846,175	0	158,846,175	$7,414,410	14.5	893,407	$822,829	$750,842	0.082	$1.761
1988-89	24,390	11,047,505	30,549	$979,442	163,644,258	0	163,644,258	$7,663,732	14.8	932,407	$857,509	$788,117	0.084	$1.765
1989-90	25,016	11,203,307	30,717	$981,398	169,424,595	0	169,424,595	$7,965,016	15.1	*883,088*	$827,772	$986,974	0.079	$2.055
1990-91	25,414	11,353,307	28,894	$1,158,752	155,371,175	0	155,371,175	$7,352,827	13.7	*950,616*	$857,305	$1,096,210	0.084	$2.055
1991-92	25,598	11,182,957	30,559	$1,116,405	154,631,635	0	154,631,635	$7,310,901	13.8	818,667	$841,395	$1,082,797	0.073	$2.350
1992-93	25,998	11,364,218	31,878	$1,214,651	170,630,171	0	170,630,171	$7,048,535	15.0	821,467	$941,923	$1,208,127	0.072	$2.617
1993-94	25,890	11,366,393	32,536	$1,288,666	188,847,792	0	188,847,792	$7,879,162	16.6	826,473	$1,085,413	$1,397,748	0.073	$3.005
1994-95	25,412	11,371,125	32,198	$1,213,444	193,048,731	0	193,048,731	$8,864,993	17.0	866,639	$1,118,874	$1,466,372	0.076	$2.983
1995-96	25,251	12,257,514	33,765	$1,461,282	203,479,827	0	203,479,827	$9,342,035	16.6	805,012	$1,164,640	$1,509,572	0.066	$3.322
1996-97	25,086	12,257,514	22,035	$1,075,647	179,701,554	17,378,828	197,080,382	$8,426,252	16.1	913,322	$1,194,606	$1,556,928	0.075	$3.013

1997-98	25,039	12,373,631	26,544	$1,166,493	189,443,154	21,270,952	210,714,106	$9,331,818	17.0	926,765	$1,225,107	$1,619,283	0.075	$3.069
1998-99	25,611	12,271,459	20,235	$1,047,664	184,695,032	33,458,121	218,153,153	$9,341,804	17.8	966,370	$1,236,346	$1,615,799	0.079	$2.951
1999-00	25,981	12,644,698	23,278	$1,210,138	191,133,855	29,330,478	220,464,333	$9,578,386	17.4	985,542	$1,260,351	$1,596,965	0.078	$2.899
2000-01	25,474	12,610,130	34,353	$1,565,085	223,827,702	3,470,630	227,298,332	$10,809,315	18.0	945,992	$1,253,503	$1,573,024	0.075	$2.988
2001-02	26,033	12,591,930	28,531	$1,701,578	222,941,427	0	222,941,427	$11,064,905	17.7	872,088	$1,201,423	$1,474,420	0.069	$3.068
2002-03	27,971	13,868,943	30,515	$1,409,285	234,563,915	0	234,563,915	$12,074,979	16.9	869,601	$1,244,676	$1,522,949	0.063	$3.183
2003-04	25,215	13,768,763	28,530	$1,331,212	223,331,935	0	223,331,935	$11,770,334	16.2	923,182	$1,155,602	$1,388,687	0.067	$2.756
2004-05	25,632	13,666,859	32,348	$2,470,513	246,208,960	0	246,208,960	$13,060,894	18.0	760,908	$1,168,202	$1,601,831	0.056	$3.640
2005-06	26,205	13,596,385	29,973	$2,601,821	249,049,225	0	249,049,225	$14,238,654	18.3	795,608	$1,236,071	$2,209,592	0.059	$4.331
2006-07	26,476	13,356,660	29,897	$2,697,689	244,975,745	0	244,975,745	$14,928,467	18.3	824,425	$1,357,181	$2,767,286	0.062	$5.003
2007-08	27,283	14,567,031	29,088	$2,598,367	246,586,365	0	246,586,365	$15,842,633	16.9	768,906	$1,402,576	$3,337,117	0.053	$6.164
2008-09	27,739	14,524,958	29,733	$5,188,764	248,154,114	0	248,154,114	$19,098,033	17.1	733,025	$1,429,819	$3,602,676	0.050	$6.865
2009-10	27,107	14,525,833	16,136	$2,656,313	220,963,070	23,241,000	244,204,070	$15,661,570	16.8	630,833	$1,367,657	$3,373,673	0.043	$7.516
2010-11	27,523	15,082,410	18,598	$2,291,098	216,957,354	28,829,730	245,787,084	$16,740,148	16.3	682,595	$1,589,170	$3,666,468	0.045	$7.699
2011-12	27,379	14,940,916	6,583	$851,666	211,923,567	35,168,276	247,091,843	$17,857,052	16.5	641,195	$1,549,218	$3,683,413	0.043	$8.161
2012-13	27,018	15,085,056	6,668	$954,746	219,838,058	33,859,450	253,697,508	$19,839,595	16.8	666,847	$1,614,118	$3,902,158	0.044	$8.272
2013-14	27,171	15,332,114	14,229	$1,609,767	227,715,730	30,275,070	257,990,800	$19,330,169	16.8	581,862	$1,639,055	$3,861,078	0.038	$9.453
2014-15	27,410	15,495,697	10,307	$1,183,488	231,045,990	33,572,620	264,618,610	$19,936,297	17.1	645,514	$1,971,437	$4,281,001	0.042	$9.686

Comprehensive Table of Historical Consumption Continued

Fiscal Year	Natural Gas		Steam		Total BTU	BTU per SFT	Total Energy Cost	Total Utility Cost	Cost per SFT	Million BTU per Student	Cost per Student	Cost per MMBTU	Energy Cost per SFT
	Therms	Cost	Pounds	Cost	Million BTU								
1979-80	340,115	$109,889	***596,952,379***	***$1,585,388***	1,261,669	127,790	$4,572,235	$6,946,116	$0.70	41.51	$228.56	$3.62	$0.46
1980-81	339,444	$123,910	***583,942,504***	***$1,550,836***	1,256,430	127,260	$5,693,166	$8,144,430	$0.82	41.49	$268.95	$4.53	$0.58
1981-82	313,876	$135,479	***576,881,672***	***$1,532,084***	1,264,417	127,548	$6,612,127	$9,157,594	$0.92	44.04	$318.98	$5.23	$0.67
1982-83	298,941	$162,199	***576,296,520***	***$1,530,530***	1,253,830	126,480	$6,763,001	$9,497,446	$0.96	45.89	$347.62	$5.39	$0.68
1983-84	270,193	$156,763	513,825,000	***$1,364,618***	1,251,693	126,858	$6,986,528	$9,516,428	$0.96	46.85	$356.18	$5.58	$0.71
1984-85	258,328	$152,442	503,303,000	***$1,336,674***	1,253,429	116,454	$7,191,482	$9,672,754	$0.90	48.93	$377.56	$5.74	$0.67
1985-86	242,079	$132,300	493,545,000	***$1,310,758***	1,232,924	113,517	$7,433,024	$10,086,808	$0.93	49.57	$405.58	$6.03	$0.68
1986-87	268,472	$142,981	535,228,000	***$1,421,460***	1,290,830	118,937	$8,155,870	$11,124,628	$1.03	51.04	$439.88	$6.32	$0.75
1987-88	310,889	$169,929	547,511,000	***$1,454,081***	1,337,464	122,312	$8,551,741	$11,579,493	$1.06	52.76	$456.80	$6.39	$0.78
1988-89	328,620	$173,706	593,485,000	***$1,576,179***	1,383,526	125,234	$8,816,880	$12,038,685	$1.09	56.73	$493.59	$6.37	$0.80
1989-90	332,892	$179,915	563,338,000	***$1,496,115***	1,407,975	125,675	$9,126,329	$12,437,190	$1.11	56.28	$497.17	$6.48	$0.81
1990-91	361,714	$211,104	520,068,000	***$1,381,198***	1,315,677	115,885	$8,722,683	$12,057,396	$1.06	51.77	$474.44	$6.63	$0.77
1991-92	357,044	$228,314	553,005,000	$1,422,415	1,355,986	121,255	$8,655,620	$12,002,227	$1.07	52.97	$468.87	$6.38	$0.77
1992-93	418,424	$272,588	537,922,000	$1,300,387	1,450,813	127,665	$8,535,774	$11,986,211	$1.05	55.80	$461.04	$5.88	$0.75
1993-94	443,617	$315,845	516,715,000	$1,395,820	1,532,380	134,817	$9,483,673	$13,362,654	$1.18	59.19	$516.13	$6.19	$0.83
1994-95	359,303	$229,265	508,944,000	$1,309,409	1,529,444	134,502	$10,307,702	$14,202,357	$1.25	60.19	$558.88	$6.74	$0.91
1995-96	1,347,927	$593,027	576,378,863	$1,425,612	1,704,514	139,059	$11,396,344	$15,496,168	$1.26	67.50	$613.69	$6.69	$0.93
1996-97	5,651,182	$1,782,696	644,310,652	$1,452,892	1,749,013	142,689	$11,284,595	$15,489,021	$1.26	69.72	$617.44	$6.45	$0.92
1997-98	2,341,741	$1,538,275	621,935,042	$1,658,205	1,568,425	126,755	$12,036,586	$16,539,181	$1.34	62.64	$660.54	$7.67	$0.97
1998-99	5,624,887	$2,051,298	563,630,212	$1,710,440	1,716,562	139,882	$12,440,766	$17,003,351	$1.39	67.02	$663.91	$7.25	$1.01

1999-00	5,675,407	$1,915,800	584,840,834	$1,746,106	1,822,624	144,141	$12,704,324	$17,307,746	$1.37	70.15	$666.17	$6.97	$1.00
2000-01	1,871,057	$1,366,801	680,465,253	$1,576,585	1,841,298	146,017	$13,741,201	$18,144,313	$1.44	72.28	$712.27	$7.46	$1.09
2001-02	2,538,186	$1,416,171	620,054,701	$1,982,546	1,753,625	139,266	$14,182,654	$18,841,043	$1.50	67.36	$723.74	$8.09	$1.13
2002-03	2,256,471	$1,304,304	655,554,559	$1,779,527	1,816,554	130,980	$14,788,568	$19,335,720	$1.39	64.94	$691.28	$8.14	$1.07
2003-04	3,137,317	$2,336,377	661,615,271	$1,910,828	1,814,840	131,809	$15,437,923	$19,893,040	$1.44	71.97	$788.94	$8.51	$1.12
2004-05	1,680,516	$1,577,429	699,196,812	$2,086,019	1,846,210	135,087	$17,108,836	$21,964,888	$1.61	72.03	$856.93	$9.27	$1.25
2005-06	1,722,275	$1,939,142	671,662,235	$1,976,108	1,798,293	132,263	$18,779,617	$24,201,388	$1.78	68.62	$923.54	$10.44	$1.38
2006-07	1,934,117	$2,042,408	671,906,602	$2,021,584	1,803,651	135,038	$19,668,564	$25,814,615	$1.93	68.12	$975.02	$10.90	$1.47
2007-08	1,424,705	$2,019,991	638,537,000	$1,713,384	1,737,152	119,252	$20,460,991	$26,914,068	$1.85	63.67	$986.48	$11.78	$1.40
2008-09	1,683,998	$1,945,521	660,064,000	$1,987,067	1,785,182	122,904	$26,232,318	$33,251,880	$2.29	64.36	$1,198.74	$14.69	$1.81
2009-10	7,323,560	$3,970,398	651,360,000	$2,242,230	1,903,166	131,019	$22,288,281	$29,271,841	$2.02	70.21	$1,079.86	$11.71	$1.53
2010-11	6,756,465	$3,766,131	645,638,000	$2,070,153	1,896,850	125,766	$22,797,377	$30,123,168	$2.00	68.92	$1,094.47	$12.02	$1.51
2011-12	9,858,498	$4,268,979	703,220,050	$2,605,163	1,877,548	125,665	$22,977,697	$30,815,491	$2.06	68.58	$1,125.52	$12.24	$1.54
2012-13	10,685,803	$4,962,647	***710,004,248***	$1,911,747	1,989,398	131,879	$25,756,988	$33,185,011	$2.20	73.63	$1,228.26	$12.95	$1.71
2013-14	7,882,688	$4,912,357	***721,632,460***	$1,915,920	1,932,456	126,040	$25,852,293	$33,268,346	$2.17	71.12	$1,224.41	$13.38	$1.69
2014-15	10,074,862	$4,786,703	***729,331,777***	$3,036,216	2,061,025	133,006	$25,906,488	$35,195,142	$2.27	75.19	$1,284.03	$12.57	$1.67