

# Higher Education and Sustainability in Tennessee: Raising the Bar

April 2, 2008—Lipscomb University

## **TBR Guidelines for Fee Revenue Spending**

presented by  
Larry Wheaton,  
CEM, Tennessee Tech University



SUCABO 2007 FALL WORKSHOP  
GREEN CAMPUSES

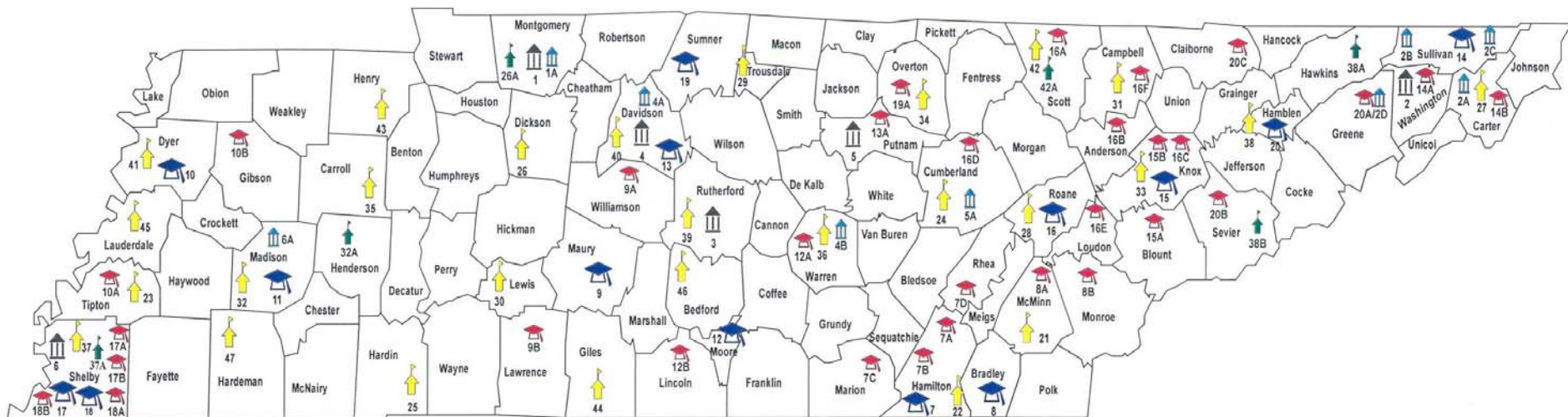
Sustainability – Fad or Substance

presented by

**Jerry W. Preston** Tennessee Board of Regents

# Tennessee Board of Regents State University & Community College System

- ◎ 6 Universities
- ◎ 13 Community Colleges
- ◎ 26 Technology Centers



*Enrolls over 185,000 students, and is the sixth largest higher education system in the nation.*

# Tennessee Board of Regents

## State University & Community College System

### **Physical Facilities**

- © 1,200 buildings
- © 30 million square feet
- © \$4.4 billion replacement value
- © 34 years average age of buildings

# Typical Costs of Ownership

33%	Plan, Design, Construct
33%	Maintenance & Operations
33%	Capital Renewal
1%	Demolition

Source: Buildings . . . The gifts that keep on taking

# Tennessee Board of Regents State University & Community College System

## Annual Utilities – Electricity and Natural Gas

14.48 KWH/GSF	.5419 CCF/GSF
2615.45 KWH/FTE	97.85 CCF/FTE

\$ 1.49 GSF

\$ 268.42 FTE

About 26% of our M & O Budget

# What are we to do as a system?

- ◎ CFC Chiller Replacement Program
- ◎ Energy Savings Performance Contracting
- ◎ Geothermal Heating & Cooling
- ◎ Variable Refrigerant Heating & Cooling
- ◎ Sustainable Design Initiatives

# Sustainable Campus Priorities

- ◎ Maximizing Space Utilization
- ◎ Reduction in Consumption of Utilities
- ◎ Utilizing
  - ◎ Sustainable design principles
  - ◎ Recycling
  - ◎ Bio-diesel & hybrid vehicles
  - ◎ Native plants and trees
  - ◎ Irrigation from reclaimed water system
  - ◎ Green Power



YOU TOOK THEIR MONEY  
AND GAVE THEM NOTHING.  
DO YOU KNOW  
WHAT THAT MAKES YOU?



# Sustainable Project Guidelines

- ◎ Land management
- ◎ Water efficiency
- ◎ Energy efficiency and atmospheric protection
- ◎ Material and resource use
- ◎ Indoor environmental quality

# Sustainable Campus Fee

- ◎ Fee amount and administration
- ◎ Use of proceeds
  - ◎ Green Power purchase
  - ◎ On-campus sustainability initiatives

# Sustainable Campus Fee

## On-Campus Sustainability Initiatives

### ◎ Categories

- ◎ Energy and Utilities (electric, gas, water, etc.)
- ◎ Local generation (renewables—solar, wind, etc.)
- ◎ Alternative fuel (hybrid vehicles, bio-diesel projects, etc.)
- ◎ Other (environmental, recycling, etc.)

### ◎ Types of Initiatives

- ◎ Projects
- ◎ Studies
- ◎ Research

# Remember – the Greenest

- © Building is the one we do not build
- © Kilowatt is the one we do not use
- © Product is most likely the one that lasts the longest

# Tennessee Board of Regents Sustainable Campus Fee Program Guidelines (SCF Program)

If a SCF is proposed by a campus for approval by the TBR Board, then the following Program Guidelines apply.

1. The initial fee request should not exceed \$10.00 per student per semester (Fall & Spring only).
2. The fee shall be administered by a committee at each campus using the following criteria:
  - A. Committee shall be appointed by the campus president/director that is comprised of an appropriate ratio of students, faculty and staff to approve and oversee the use of funds.
  - B. Under the leadership of the campus administration, the committee shall develop a decision making structure to establish on an annual basis:
    - 1) The amount of fee to be allocated to the green power purchase (taking into consideration TVA's ability to meet the green power purchase demand) and on-campus sustainability initiatives.
    - 2) Approval of on-campus sustainability initiatives
  - C. Funds for each category for on-campus sustainability initiatives should be allowed to be carried forward if needed for near-term future expenditures. Fund balances in each category should not exceed a two-year accrual without encumbrance or a carry forward justification plan.
  - D. A status report shall be published by each campus at the end of each fiscal year for all program activities. Based on this report the campus committee shall evaluate each year the validity of the fee and the appropriateness of the fee amount and make a recommendation, if necessary, for an adjustment to the fee.

# Tennessee Board of Regents Sustainable Campus Fee Program Guidelines (SCF Program)

3. The proceeds from the fee may be used for the following:
  - A. TVA Green Power Switch or Other Certified Green Power Purchases
    - 1) Recommended purchase amount 0 to 10% of the total KWH used by the campus. Purchases over this amount should be evaluated carefully and justified by the campus committee prior to purchase.
    - 2) Green tag or other types of certified green power purchases should be evaluated carefully and justified by the campus committee prior to purchase.
  - B. On-campus Sustainability Initiatives
    - 1) Should be for direct demonstrable campus sustainability benefits
    - 2) Proceeds should be allocated between sustainability initiatives with the primary focus on projects for energy efficiency and utility conservation
    - 3) Should not be used for budgeted salaries, special events or operational expenditures not associated with the SCF Program
    - 4) Shall comply with State law, State Building Commission/Tennessee Board of Regents Policy, Procedures and Guidelines where applicable, with regard to project approvals, use of designers and code compliance.

# Tennessee Board of Regents Sustainable Campus Fee Program Guidelines (SCF Program)

## Categories

- ⊙ Energy and Utilities (electric, gas, water, etc.)
- ⊙ Local Generation (Renewables – solar, wind, etc.)
- ⊙ Alternative Fuel (Hybrid vehicles, Bio-diesel projects, etc.)
- ⊙ Other (Environmental, Recycling, etc.)

## Types of Initiatives

- ⊙ Projects
- ⊙ Studies
- ⊙ Research

### ⊙ Projects should:

1. Provide or demonstrate a specific energy or environmental benefit
2. Be technically and economically feasible
3. Be cost effective to operate and maintain
4. Be consistent with campus standards and master plan

### ⊙ Studies should:

1. Focus on implementable technologies or initiatives that are economically and technically feasible
2. Quantify energy or environmental benefit(s)
3. Address feasibility, operability, and maintainability of the technology or initiative
4. Not duplicate prior, similar studies

### ⊙ Research should:

1. Focus on identified sustainability categories
2. Have significant level of student participation/support



# TTU Sustainable Campus Fee Projects

Project	Project Description	Y/N	Amount	Comments
Green Power Switch Purchase	Green Power can be purchased in any amount as a one time purchase	Yes	\$1,500	A one time purchase does not require a contract. The committee has already voted for a minimum one time purchase from the first years funds.
Electric Vehicle	Purchase 2 electric vehicles @\$13,000 each for non license or licensed use on campus. Identify with logos indicating "TTU Student Sustainability Fees at Work" or similar student identification.	Yes	\$26,000	UT purchased 1 and now has purchased 3 more with very good success. Maintenance would implement. I
Addenda	Electric panels would be installed where visible. Typically, roof mounting rather than at ground level.	Yes	15,000	Add solar panels for charging batteries on electric vehicles with offsetting load of charger.
Intramural Field Light Replacement	Replace the outdated, inefficient incandescent light fixtures on a portion, SE Field, of the south Intramural Field. Matching Funds supplied by the Intramural Program for replacing fixtures and panels per TVA Recommendations. Infrastructure supported by Cookeville Electric Dept.	Yes	\$40,000	<b>Deferred Maintenance Project.</b> TBR Regional Designers would provide drawings. Maintenance and hourly contract labor would implement.
Residence Hall Steam Valve Replacement	Connect the buildings heating system steam valve to the Building Automation System for automatically adjusting the temperature to the changing outdoor conditions. This measure would decrease the coal boiler load and provide the occupants with a more comfortable building.	Yes	\$20,000	<b>Deferred maintenance project.</b> Funding allows the students to win with environmental and comfort benefits. Maintenance would implement by connecting the valves to the Building Automation System.
Biodiesel Equipment Conversion	Buy biodiesel from Harris Oil, local provider. Convert Generators to biodiesel(B20) by modifying Title V Air Pollution Permit. Catepillar does not require engine modifications.	Yes	\$10,000	Utilize TBR Regional Designer for modifying Title V Air Pollution Permit.

TTU Budget as of April 2007: \$129,453

Recommended Total Amount: \$112, 500

# MTSU Student Environmental Initiatives Fee

Project ID	2006-07	2007-08	2007-08
		Fall Semester	Spring Semester (TBD)
Green Power Purchase	\$220,000		\$230,000
Bus conversion to run on used cooking oil	\$15,000		
Chilling plant: pressure gauges installation	\$1,000		
Development of flex-fueled engine	\$13,000	\$14,000	
Golf cart conversion (electric to solar)		\$8,000	
Hybrid/Alternative fuel vehicle purchase	\$17,250		
Installation of programmable thermostats in FSD maintenance shops	\$1,200		
Lamp crusher	\$4,000		
Light switch plate cover replacement	\$2,500		
Recycling - community drop-off relocation/expansion	\$3,000		
Recycling containers	\$1,500	\$5,000	
Re-lamp Cason Kennedy Nursing Building (existing portion)	\$30,600		
Re-lamp Fairview Building		\$30,600	
Sub-metering for Chiller Plant	\$4,000		
Sub-metering for Murphy Center	\$4,000		
Wright Music HVAC controls replacement	\$29,950		
<b>Total</b>	<b>\$347,000</b>	<b>\$57,600</b>	<b>\$230,000</b>