



September 28, 2012

Ms. Donna Geiger
Office of the Governor
1100 San Jacinto
Austin, Texas 78701

Mr. John O'Brien
Deputy Director
Legislative Budget Board (LBB)
Robert E. Johnson Bldg. – 5th Floor
1501 North Congress
Austin, Texas 78701

RE: **Annual Energy Report**

The Texas Tech University Health Sciences Center (TTUHSC) Annual Energy Report for FY-2012 is being submitted in accordance with Governor's Executive Order, RP 49 and subsequent changes made by Senate Bill, SB5. TTUHSC continues to promote and implement energy conservation measures and strategies and seek new ideas to reduce consumption and improve building system efficiencies.

A. Energy Consumption & Cost

In FY2012, the institution consumed 633,574,295 kBtu (main & regional campuses). FY2012 energy utilization index (EUI) is 252 kBtu/sq ft, an increase of 2.4% as compared to FY2011. FY2012 energy cost index (ECI) is \$2.90/sq ft, which remained the same compared to FY2011. Heating Degree Days (HDD) for the FY2012 increased by 0.6% compared to FY2011. Cooling Degree Days (CDD) for the FY2012 decreased by 7.5% compared to FY2011.

TTUHSC continues to undergo significant capital improvements, programmatic changes, increase in overall occupancy and steady growth, which are expected to increase the overall energy consumption. Attached Exhibit shows FY2012 energy consumption and cost breakdowns. Exhibit also includes FY2011 totals for each utility and energy equivalents to facilitate comparisons between annual totals. In addition, a benchmarking report is included to show comparison of energy index (EUI & ECI) values of TTUHSC from FY-2010 to FY-2012 with median index values of other health related institutions in Texas.

B. Energy Conservation Plan & Action

TTUHSC has a continuous program to educate the faculty and staff regarding energy conservation. TTUHSC Engineering Services Department maintains specific operating





policy and procedures relating to the energy conservation program and utility review. Operating policy and procedures make the responsibility of energy conservation the obligation of every employee. The key element of the plan is to prevent waste and assure conservation of resources.

TTUHSC Physical Plant has identified the following tactics and measures for potential consideration in reducing the campus energy consumption. Projects will be prioritized based on a variety of factors including return on investment, cost and availability of funding. Below is a partial list and status of projects that are completed or currently being designed and/ or implemented.

1. Lighting retrofit for WHRI/ LBIWH building, Amarillo. *Project completed.*
2. Lighting retrofit for Regional Academic Health Center, Odessa. *Project completed.*
3. Replacement of old chiller which exceeded expected service life, with a new energy efficient variable speed drive chiller at Regional Academic Health Center, Odessa. *Project completed.*
4. Replace old conventional boilers with new high-efficient condensing boilers at the WHRI/ LBIWH building, Amarillo. *Project completed.*
5. Replacement of an old, inefficient chiller with a new energy efficient variable speed drive chiller at Texas Tech Medical Center, El Paso. *Project completed.*
6. Install dedicated cooling units for Medical Pavilion data/ communication rooms. *Project is completed.*
7. Mechanical system modifications to reduce energy consumption at the Medical Science Building, El Paso. *Project completed.*
8. Complete installation of dual duct air distribution systems for Academic Education Building at El Paso. This has been done to operate the HVAC systems according to the design intent. *Project completed.*
9. Implementation of centralized Computer Maintenance Management System (TMA) to effectively manage maintenance work orders. *Project completed.*
10. Replace air handling DX units which exceeded expected service life, and install centralized control system at the Southwest campus, Lubbock. *Project is currently in implementation phase.*
11. Complete installation of occupancy sensors for automatic lighting control. *Project is being implemented through new construction and renovations.*





12. Replace inefficient motors with premium efficiency motors. *Project is currently in implementation phase.*
13. Replace air handling units which are old, inefficient and under capacity, by newer energy efficient air handling units. *Project is being planned and implemented at a rate of up to two units per year.*
14. Install variable frequency drives for air handling units which operate at partial load frequently. *Project is currently in implementation phase.*
15. Install new direct digital control (DDC) system and other HVAC improvements at the WHRI building in Amarillo. Project includes air handling unit upgrade. *Project is currently in design phase.*
16. Install chiller optimization module in the PFSOM and MSB1 facilities, El Paso. *Project is currently in implementation phase.*
17. Re-commissioning of air handling units at the HSC building, Lubbock. *Project is currently in implementation phase.*
18. Energy recovery system in Medical Science Building, El Paso. *Project is currently in planning and assessment phase.*
19. Standard use of F28T8 lamps for office/laboratory/classroom and other such areas, and F25T8 lamps for hallway/toilet and other areas which need less illumination. This is being done to comply with the lighting power density requirement of the state energy code.
20. New energy efficient LED lights are being tested for performance and reliability.
21. Significant cardboard recycling on Lubbock campus.

C. Future Energy Reduction Plans

Terracon/ Energy Systems Associates (ESA) conducted a walk-through energy analysis of HSC buildings at Lubbock and Amarillo campus, in the month of August 2011. This was provided through a program sponsored by the State Energy Conservation Office (SECO). The preliminary energy assessment report identified twelve energy conservation projects which are projected to cost up to \$2,582,141 with an estimated payback of 9-1/2 years.

In addition to above, TTUHSC Engineering Services has conducted energy audits and identified various energy reduction projects which are projected to cost up to \$5M with





significant energy savings. The details of which are included in the 'Resource Efficiency Plan' prepared in accordance with 34 TAC, Chapter 19.

D. Fuel Consumption Reduction Plans

TTUHSC continues to emphasize fuel conservation awareness with strategies such as group travel, regular preventative maintenance, and an emphasis on tire pressure and conditions to gain economies. In FY-2012, a total of 553,317 miles were driven by the institution, which is 13.9% less than that of FY-2011.

Fuel (gasoline/propane/diesel) Data:

FY11 Consumption	FY11 Cost	FY12 Consumption	FY12 Cost
32,240 Gallons	\$98,081	34,282 Gallons	\$112,116

Your consideration of this update and information is appreciated.

Sincerely,

George G. Morales, P.E.
Assistant Vice-President for Physical Plant & Support Services

Enclosures: EXHIBIT
BENCHMARKING REPORT

XC:

1. Elmo Cavin,
Executive Vice-President of Finance & Administration
2. Director, State Energy Conservation Office
Comptroller of Public Accounts
111 E. 17th Street, Suite 1114, Austin, Texas 78774

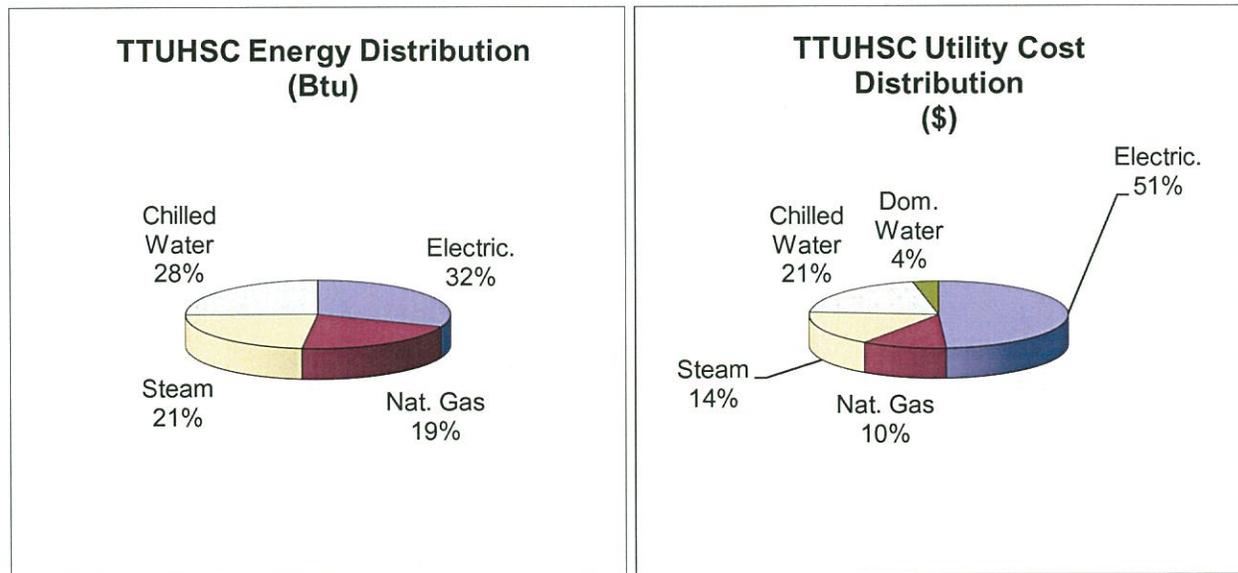




EXHIBIT

ANNUAL ENERGY CONSUMPTION AND COST				
ENERGY	CONSUMPTION		COST	
TYPE	FY 2012	FY 2011	FY 2012	FY 2011
ELECTRICITY, kWh	58,352,699	56,601,844	\$ 3,908,962	\$ 3,796,804
NATURAL GAS, ccf	1,197,891	1,163,060	\$ 727,391	\$ 725,598
STEAM, mlb	120,509	118,013	\$ 1,054,821	\$ 1,106,653
CHILLED WATER, tn-hr	14,661,811	14,206,675	\$ 1,583,559	\$ 1,602,635
TOTAL ENERGY (kBtu)/ COST (\$)	633,574,295	615,753,361	\$ 7,274,733	\$ 7,231,690

N:B: Natural Gas is used to produce the Thermal Energies of Steam and Chilled Water





ENERGY BENCHMARKING REPORT

Institution	Energy Utilization Index (EUI) in kBtu/gsf	Energy Cost Index (ECI) in \$/gsf
Texas Tech Univ Health Sciences Center (FY-12)	252	\$2.90
Texas Tech Univ Health Sciences Center (FY-11)	246	\$2.90
Texas Tech Univ Health Sciences Center (FY-10)	245	\$2.95
Health Related Institutions in Texas (Median)	289	\$5.22

N.B.:

1. EUI can increase significantly with more research and hospital space; occupancy density; year of construction; building plug loads etc.
2. ECI can vary significantly with the local utility cost.
3. CLEAResult provided the median EUI and ECI of HRIs in Texas.

