



October 6, 2014

Office of the Governor
1100 San Jacinto
Austin, Texas 78701

Mrs. Ursula Parks, Director
Legislative Budget Board (LBB)
Robert E. Johnson Bldg. – 5th Floor
1501 North Congress
Austin, Texas 78701

RE: Annual Energy Report, FY2014

The Texas Tech University Health Sciences Center (TTUHSC) Annual Energy Report for FY-2014 is being submitted in accordance with Governor's Executive Order, RP 49, Senate Bill 700, and State Energy Conservation Office directives. TTUHSC continues to promote energy conservation measures and strategies and seek new ideas to reduce consumption and improve building system efficiencies.

A. Energy Consumption & Cost

In FY2014, the institution consumed 488,561,356 kBtu. FY2014 energy utilization index (EUI) is 236 kBtu/gsf, which remained same compared to FY2013. FY2014 energy cost index (ECI) is \$3.06/gsf, which increased by 8% compared to FY2013. The gross area (gsf) of the institution in FY2014 has increased by 0.5% as compared to FY2013. Heating Degree Days (HDD) for the FY2014 increased by 9% compared to FY2013 due to colder weather, and Cooling Degree Days (CDD) for the FY2014 decreased by 2% compared to FY2013 due to milder summer weather conditions.

TTUHSC continues to undergo capital and system improvements, increase in overall occupancy and steady growth, which are generally expected to increase the overall energy consumption. Attached Exhibit 'A' shows FY2014 energy consumption and cost breakdowns. It includes FY2013 energy consumption, cost, and energy equivalents to facilitate comparison between annual totals. Exhibit 'B' shows a benchmarking report for comparison of energy index (EUI & ECI) values of TTUHSC from FY-2010 to FY-2014 with the median index value range of 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 procedure relating to the energy conservation program and utility review. Operating policy and procedures make the responsibility of energy conservation the obligation of every employee. Flyers, brochures, and periodic reminders are in process. A key element of the plan is to prevent waste and assure the conservation of resources.

TTUHSC Engineering Services has identified several projects for potential consideration in reducing the campus energy consumption. Projects were prioritized based on a variety of factors including return on investment, and cost. Projects that were implemented in the past were listed in the previous annual reports. Below is a partial list and status of projects that were completed in FY-2014 or are currently being designed and/ or implemented.

1. Replace air handling units in Lubbock HSC which are inefficient and beyond their expected service life with newer energy efficient air handling units. *Two air handling units were replaced with new AHUs with DDC and fanwall system.*
2. Upgrade electrical power systems to improve reliability at Lubbock HSC, which include panel and breaker upgrades, improved protection of transformers, testing and inspection of equipment. *Project is currently in implementation phase.*
3. Install six new LED fixtures for parking lot at Amarillo WHRI building. Incentives are expected from XCEL Energy. *Project is currently in construction phase.*
4. Install new digital energy (Btu) meters for chilled water and hot water flows at JW Clinic, Midland. *Project is completed.*
5. Complete installation of occupancy sensors for automatic lighting control. *Project is being implemented through new construction and renovations.*
6. Replace inefficient motors with premium efficiency motors. *Motors are being replaced at the end of their service life.*
7. Install new direct digital control (DDC) system at the WHRI building, Amarillo. Project includes upgrade of air handling units, terminal boxes, and pumps as funding allows. *Project is currently in construction phase.*
8. Re-commissioning of air handling units at the HSC building, Lubbock. *Project is on hold.*
9. It's our operating policy to use 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. *Project is ongoing.*
10. New energy efficient LED lights are being tested for performance and reliability. *Project is in testing, evaluation, and analysis phase.*





C. Future Energy Reduction Plans

Energy Systems Associates (ESA) and Willdan Energy submitted a retro-commissioning project report for two of our HSC buildings in Amarillo campus. This service was provided through a program sponsored by the XCEL Energy. Project report emphasizes on control upgrades and chiller replacement.

TTUHSC Engineering Services is reviewing another proposal from BEE (Building Energy Efficiency) for re-commissioning of HVAC systems in the HSC building at Lubbock. In addition to the above, there are plans to test sensor driven dimmable LED fixtures for parking lot lighting. There are plans to replace old, inefficient, and pneumatically controlled air handling units with newer units having improved direct digital control (DDC) systems, and also to replace chillers which are nearing end of service life. All of these are listed in the Resource Efficiency Plan.

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. FY-2014 total fuel consumption has increased by 10% as compared to FY-2013. TTUHSC has several remote regional campuses in West Texas, which require employees to drive to those locations frequently.

Fuel (gasoline/propane/diesel) Data:

FY14 Consumption	FY14 Cost	FY13 Consumption	FY13 Cost
29,410 Gallons	\$ 93,999	26,679 Gallons	\$ 89,263

The total miles driven in FY2014 have increased by 9% as compared to FY2013.

Your consideration of this update and information is appreciated.

Sincerely,

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





Enclosures: EXHIBITs 'A' & 'B'

XC:

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





EXHIBIT ‘A’

ANNUAL ENERGY CONSUMPTION AND COST				
ENERGY TYPE	CONSUMPTION		COST	
	FY 2014	FY 2013	FY 2014	FY 2013
ELECTRICITY, kWh	38,169,418	38,836,536	\$ 2,623,809	\$ 2,452,556
NATURAL GAS, ccf	527,836	503,333	\$ 353,456	\$ 286,118
STEAM, Mlb	138,487	123,766	\$ 1,506,032	\$ 1,258,587
CHILLED WATER, Ton-hr	14,578,655	13,985,041	\$ 1,841,271	\$ 1,740,872
TOTAL ENERGY (kBtu), COST (\$)	488,561,274	480,918,922	\$ 6,324,568	\$ 5,738,133

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

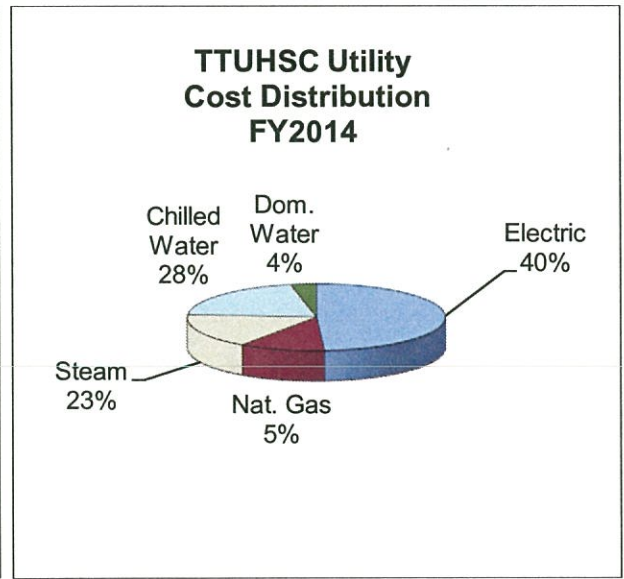
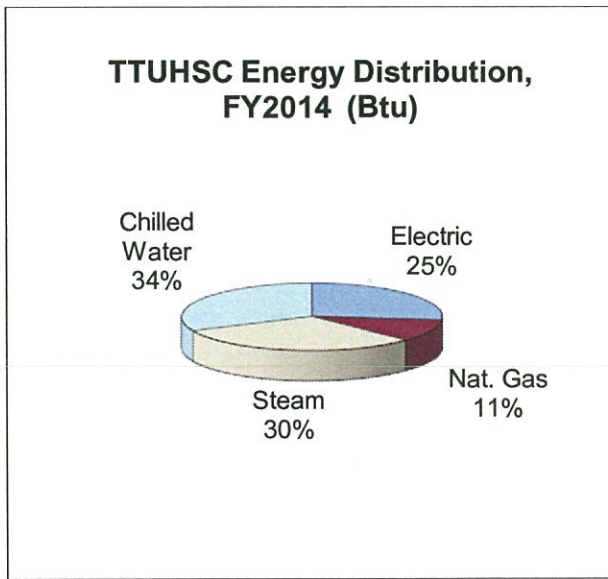




EXHIBIT 'B'
(ENERGY BENCHMARKING REPORT)

Institution	Energy Utilization Index (EUI) in kBtu/gsf	Energy Cost Index (ECI) in \$/gsf
Texas Tech Univ Health Sciences Center (FY-14)	236	\$3.06
Texas Tech Univ Health Sciences Center (FY-13)	236	\$2.83
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	\$3.90
TTUHSC Energy Management Plan Target	226 - 250	< \$3.37

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, 4301 Westbank Drive, Austin, TX 78746, provided the median EUI and ECI of HRIs in Texas for years 2011 & 2012.

