



October 1, 2007

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: RP-49, FY 2007 – 4th Quarter Update

The Texas Tech University Health Sciences Center (TTUHSC) Energy Savings Update is being submitted in accordance with Governor's Executive Order, RP 49, Electric Conservation by State Agencies. TTUHSC continues to promote energy conservation measures and strategies and seek new ideas to reduce consumption and improve building system efficiencies.

A. Energy Consumption & Goals

Attached is Exhibit I where our 4th Quarter FY 2007 consumption breakdowns can be found. Exhibit I also includes previous quarters, overall totals for each utility and energy equivalents to facilitate comparisons between quarters and annual totals.

Additionally, Table I (Page 2) shows a breakdown for each type of utility in kBtu per square foot. The energy units were converted to kBtu to allow for comparisons of the various energy forms and then divided by the appropriate campus square footage to obtain an energy utilization index in kBtu/square foot. A negative % change indicates a decrease in consumption, while a positive number indicates an increase compared to the previous year.

In the fourth quarter of FY07, the campus consumed 52.41 kBtu/sq ft, an increase of 6.85% from FY06. The increase is due to the addition of a new building with a considerable amount of research space at the TTUHSC El Paso campus. Due to the unique and complex infrastructure requirements, research space has significant higher energy consumption per square foot compared to other more basic buildings. The annual energy utilization index of TTUHSC in FY07 has increased by 1.26% as compared to FY06. Our overall institutional goal would be to reduce our energy utilization index by 2.5% for the period from 2008 to 2013.





Table I: Campus Energy Use (kBtu/Sq ft): June - August

Utility	FY06 Actual	FY07 Actual	% Change
Electricity	17.67	20.49	15.96 %
Nat. Gas	1.97	2.67	35.53 %
Steam	6.96	6.78	-2.59 %
Chilled Water	22.45	22.47	0.09 %
Total	49.05	52.41	6.85 %

B. Current Energy Reduction Plans

Texas Tech University Health Sciences Center 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. The successful implementation and funding of these and other projects will form the basis of the energy reduction goal of 2.5% per year reduction in energy utilization index for the period of fiscal years 2008 through 2013.

Tactics:

Evaluate and secure funding for the following projects.

1. Installation of pressure independent control valves for chilled water flow control to the air handling units.
2. Installation of lighting occupancy sensors.
3. Installation of vending machine occupancy sensor controls.
4. Lighting retrofit to replace rest of the electromagnetic ballasts and T12 lamps by new energy efficient and environmental friendly electronic ballast and T8 fluorescent lamps. Incandescent lamps would also be replaced by compact fluorescent lamps.
5. Relamping to meet new ASHRAE 90.1-2004 lighting power density requirement standard, would be evaluated to ensure the illumination meet IESNA standards. We shall use the commercially available model of light bulbs that uses the fewest watts for the necessary illumination to meet the amended Government Code, Subchapter A, Sec. 2165.008.





6. Installation of an energy recovery system for the Medical Science Building at TTUHSC El Paso. This would recover energy from exhaust air and transfer to the outside air being consumed by the air handling units.
7. Installation of an energy management control systems for the Women's Health Research Institute, Amarillo, and the Health Sciences Center in Odessa.
8. Installation of a dual duct air distribution system for TTU Health Sciences Center at El Paso to operate the air handling units according to the design intent.
9. Installation of a smaller boiler at the Medical Science Building at TTUHSC El Paso to meet the minimum load during summer season.
10. Installation of variable flow exhaust system for fume hoods and other BSL-2 labs to maintain constant negative pressure and reduce energy consumption.
11. Modernization and replacement of older electrical equipment including motors and transformers.
12. Develop insulation replacement project to identify and replace damaged, missing, or inadequate insulation.
13. Re-commissioning of existing facilities to ensure they are performing as designed.
14. Modification of existing energy management control systems in Lubbock and regional campuses.
15. Operational improvements such as implementation of Computer Maintenance Management System to track maintenance work and improvements.
16. Improvements to the building envelopes.

Additional Tactics not requiring financing:

1. Ensure that all renovations and new building construction meet or exceed the most current edition of energy conservation codes.
2. Review all tariffs and ensure that the most favorable terms are being realized by TTUHSC.
3. Keep abreast of new and proven technologies and apply these technologies where opportunities exist.
4. Develop campus energy conservation committee to discuss opportunities for reducing energy consumption, optimizing operations, and reducing O&M costs.
5. Monthly review of the energy consumption from TTUHSC facilities and the immediate investigation into any variances from plan to correct and prevent future inefficiencies.
6. Continuously develop and update list of energy conservation projects.





7. Establish 24/7 operator program at El Paso campus to improve response times and provide continuous monitoring of building systems.
8. Participate in forums presented by the State Energy Conservation Office and Energy Systems Laboratory.

C. Future Energy Reduction Plans

TTUHSC has identified various energy conservation projects which are projected to cost about \$1,907,980 with an estimated payback of less than 5 years. The details of which are included in the 'Resource Efficiency Plan' in accordance with 34 TAC, Chapter 19.

D. Fuel Consumption Reduction Plans

TTUHSC continues to emphasize energy conservation awareness with strategies such as regular preventative maintenance, upgrading fleet to more efficient type vehicles and management of trip efficiencies to gain economies. Actual vehicular mileage for this quarter was reduced by 11% as compared to the 4th quarter of FY 2006.

Your consideration of this update and information is appreciated.

Sincerely,

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

Enclosure: EXHIBIT 1

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
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EXHIBIT I

2006 ACTUAL ENERGY CONSUMPTION					
ENERGY	1st Quarter <u>FY 2006</u>	2nd Quarter <u>FY 2006</u>	3rd Quarter <u>FY 2006</u>	4th Quarter <u>FY 2006</u>	Total <u>FY 2006</u>
ELECTRICITY, kwh	9,393,292	8,833,109	9,074,251	10,354,326	37,654,978
NATURAL GAS, ccf	64,004	119,741	76,174	38,306	298,225
STEAM, mlb	21,660	31,858	19,564	12,404	85,486
CHILLED WATER, tn- hr	<u>2,603,714</u>	<u>1,784,850</u>	<u>2,496,139</u>	<u>3,742,855</u>	<u>10,627,558</u>
THERMAL ENERGY*, mbtu	55,568,748	57,194,734	51,924,366	58,843,649	223,531,496
ENERGY EQUIVALENT, mbtu	<u>94,207,665</u>	<u>99,651,510</u>	<u>90,725,440</u>	<u>98,120,820</u>	<u>382,705,435</u>
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*Natural Gas is used to produce the Thermal Energies of Steam & Chilled Water

2007 ACTUAL ENERGY CONSUMPTION					
ENERGY	1st Quarter <u>FY 2007</u>	2nd Quarter <u>FY 2007</u>	3rd Quarter <u>FY 2007</u>	4th Quarter <u>FY 2007</u>	Total <u>FY 2007</u>
ELECTRICITY, kwh	9,038,188	8,572,930	9,911,544	12,126,183	39,648,845
NATURAL GAS, ccf	66,267	151,664	86,703	52,468	357,102
STEAM, mlb	19,787	39,251	23,022	12,197	94,257
CHILLED WATER, tn- hr	<u>2,309,839</u>	<u>1,898,332</u>	<u>2,257,151</u>	<u>3,781,994</u>	<u>10,247,316</u>
THERMAL ENERGY*, mbtu	49,939,352	66,858,857	52,939,563	59,081,159	228,818,931
ENERGY EQUIVALENT, mbtu	<u>87,598,916</u>	<u>111,709,326</u>	<u>95,680,734</u>	<u>105,861,557</u>	<u>400,850,534</u>

*Natural Gas is used to produce the Thermal Energies of Steam & Chilled Water

