

Texas Tech University Energy Savings Program October 2009 Update

The Texas Tech Energy Savings Update is being submitted in accordance with Governor's Executive Order RP 49, Electric Conservation by State Agencies.

A. Energy Goals

1. Campus Energy Use (E&G)

Energy units are converted to thousands of BTUs per square foot (kbtu/sq ft) to allow for comparisons of the various energy forms. Goals and energy use are therefore stated in kbtu/sq ft. Estimated savings are based on energy consumption for the same time period from the previous year normalized to current energy costs and campus square footage.

For FY09 the campus consumed 182.41 kbtu/sq ft, a decrease of 2.1% from FY08.

In Table I, the campus energy use is broken down by utility type.

Table I: Campus (E&G) Energy Use (kbtu/sq ft): September '08 – August '09

Utility	FY08 Actual	FY09 Actual	% Change from previous year	Estimated Savings
Electricity	50.08	49.11	Down 1.9%	\$ 117,300
Natural Gas	16.19	17.26	Up 6.6%	(\$ 22,700)
Steam	59.47	54.88	Down 7.7%	\$ 230,900
Chillwater	60.54	61.16	Up 1.0%	(\$ 1,500)
Total	186.28	182.41	Down 2.1%	\$ 324,000

Since RP 49 first went into effect, Texas Tech University has reported the above Campus Energy Use data (Table I) for only E&G buildings. In complying with both RP 49 and HB 3693, and in order to maintain continuity with previous reporting practices, Texas Tech will continue to report E&G.

2. House Bill 3693

In compliance with House Bill 3693, Texas Tech University has set a goal to reduce total electrical consumption by 2.5% for FY09. Table II shows the kilowatt hours per square foot (kwh/sq ft) for the whole campus, i.e. both E&G buildings and Auxiliaries. The university is currently on track to achieve this goal.

For fiscal year '09, cumulative electrical consumption is 15.1356 kwh/sq ft. This consumption is down 2.6% compared to fiscal year 2008 (15.5459 kwh/sq ft). The decline of electricity use during this fiscal year is attributed to two energy projects in E&G and one project in Auxiliaries (specifically Housing) which were in progress throughout fiscal year '09.

Table II: Whole Campus Electricity Use (kwh/sq ft): September '08 – August '09

Whole Campus Electricity Use in kwh/sq ft	FY 08 Reference Data in kwh/sq ft	2.5% Reduction Goal in kwh/sq ft	FY 09 Actual Consumption in kwh/sq ft	Percent Increase/Decrease from previous year, by quarter
1st Quarter	4.2791	4.1722	3.8474	-10.1%
2nd Quarter	3.6157	3.5253	3.6604	1.2%
3rd Quarter	3.7309	3.6376	3.6429	-2.4%
4th Quarter	3.9206	3.8226	3.9849	1.6
Yearly Total	15.5459	15.1573	15.1356	-2.6%

3. Fleet Fuel Management Plan (Vehicles)

In FY06, Governor Perry's Executive Order RP-49 required agencies to establish an energy conservation program by setting a percentage goal for reducing its consumption of electricity, gasoline and natural gas.

As a result of that order, Texas Tech University established the following goals related to vehicles:

- Reduce fuel consumption by 5% per year
- Maintain an average miles per gallon of 12.4

In the third quarter of 2009, Texas Tech vehicles averaged 11.3 miles per gallon. These figures represent a decrease of 0.3 miles per gallon compared to the same quarter of the previous year.

III: Historical University Vehicle Fleet Data

	Miles	Fuel	Miles Per Gallon
FY07-1	600,613	52,987	11.3
FY07-2	496,083	43,274	11.5
FY07-3	616,358	56,345	10.9
FY07-4	672,910	55,261	12.2
FY08-1	662,092	63,868	10.3
FY08-2	546,135	42,657	12.8
FY08-3	714,926	58,007	12.3
FY08-4	671,156	57,835	11.6
FY09-1	654,959	56,582	11.6
FY09-2	527,121	46,382	11.4
FY09-3	723,064	60,060	12.0
FY09-4	674,416	59,941	11.3

B. Current Energy Reduction Plans

1. Campus Energy Use

a. E&G

Texas Tech has received funding from TPFPA using the Master Lease Purchase Program for four energy projects.

- 1) AHU VFD Project – Final cost of \$558,904 with a payback of 5.2 years. Project is 100% complete. Since last report, the energy savings which were projected by ESA, Inc. have been validated with respect to the university's electrical bills. Savings is \$110,000/yr with payback complete in July 2013.
- 2) International Textile Center Performance Contract - \$573,000 with a 6 year payback. Project is 100% complete. The energy savings which were projected by Johnson Controls, Inc. has been validated with respect to the university's electrical bills. Savings is \$103,000/yr with payback complete in April 2014.
- 3) CHACP I Stack Heat Recovery - \$800,000 with an estimated 1.9 year payback. Bid came in 40% over allowed budget at \$1,120,000. Project shelved.
- 4) CHACP II Stack Heat Recovery - \$500,000 with an estimated 3.6 year payback. Bid came in 35% over budget at \$676,924. Project shelved.

b. Auxiliaries

Housing has completed the following projects:

- 1) Relamping of residence halls in Housing with fluorescent lighting.
- 2) Installation of newer, more efficient outdoor lighting around residence halls.
- 3) Installation of VFDs on residence hall chillwater pumps.

c. Energy Audit

The university has a goal to perform a minimum of 1 detailed energy audit per month beginning with the largest consumers of energy.

- 1) Texas Tech completed 2 detailed energy audit at Education and English/Philosophy and 4 energy reviews at Mechanical Engineering, Industrial Engineering, Math and Library this Quarter.

2. Fleet Management

The Texas Tech University tactics to achieve this goal are:

- 1) Improve overall fuel efficiency of fleet vehicles by replacing older, inefficient vehicles with newer, more efficient vehicles.
Texas Tech University has acquired 140 new, more efficient vehicles, as well as increased our alternative utility vehicles by approximately 21% since the Governor's executive order.
- 2) Continue the aggressive Preventive Maintenance program to maintain all vehicles at their peak efficiency.
Routinely, quarterly notices are sent to all vehicle custodians advising when preventive maintenance services are needed. As of FY2010, these notices will be sent monthly.
- 3) Continue to utilize the State's Fleet Data Management System.
Texas Tech has upgraded to the State's new vehicle management system. Additionally we are currently conducting a 100% data variation/audit to ensure the vehicle information in the State's system is accurate and complete.
- 4) Educate personnel on the efficient use of University vehicles.
New initiatives will continue to be collected and shared with appropriate vehicle custodians and operators through the Vehicle Fleet Management quarterly newsletter.
- 5) Document agency best practices for operation and maintenance.
New initiatives will continue to be collected and shared with appropriate vehicle custodians and operators through the Vehicle Fleet Management quarterly newsletter.

C. Future Energy Reduction Plans

Texas Tech is currently evaluating several energy reduction projects such as exterior LED lighting retrofits, building commissioning and re-commissioning procedures, boiler blowdown heat recovery and air-handler

upgrades. The university will proceed with engineering analysis and take action based on feasibility, available funding and favorable payback.

D. Fuel Consumption Reduction Plans

The Vehicle Fleet Management office will network with vehicle custodians to exchange information on vehicle efficiency and solicit additional best practices and other creative initiatives for the university vehicle fleet.