

## Texas Tech University Energy Savings Program April 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 the first two quarters of FY09 the campus consumed 88.98 kbtu/sq ft, a decrease of 8.7% from the first two quarters of 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- February**

Utility	FY08 Actual	FY09 Actual	% Change from previous year	Est. Savings
Electricity	25.37	23.81	Down 6.1%	\$ 199,400
Natural Gas	10.11	10.22	Up 1.1%	(\$ 1,900)
Steam	35.50	31.21	Down 12.1%	\$ 289,700
Chillwater	26.50	23.74	Down 10.4%	\$ 223,600
<b>Total</b>	<b>97.48</b>	<b>88.98</b>	<b>Down 8.7%</b>	<b>\$ 710,800</b>

Since RP 49 first went into effect, we have 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.

For the first and second quarters of FY09 cumulatively, energy consumption is down 3.7% compared to the first two quarters of fiscal year 2008. The decline of electricity use during these two quarters is attributed to two energy projects in E&G and one project in Auxiliaries (specifically Housing) which were in progress throughout last fiscal year.

For the second quarter discretely, E&G electrical consumption is down 2.5% as a result of energy projects. However, whole-campus electricity use is up 3.8% for the second quarter, attributable to a 15.5% usage increase in Auxiliaries.

**Table II: Whole Campus Electricity Use (kwh/sq ft): September- February**

<b>Whole Campus Electricity Use in kwh/Sq Ft</b>	<b>Previous Year Reference Data</b>	<b>2.5% Reduction Goal</b>	<b>Actual Consumption</b>	<b>Percent Increase/Decrease from previous year, by quarter</b>
<b>1<sup>st</sup> Quarter</b>	4.2790	4.1721	3.8474	-10.1%
<b>2<sup>nd</sup> Quarter</b>	3.6157	3.5253	3.7537	3.8%
<b>3<sup>rd</sup> Quarter</b>	3.7309	3.6376		
<b>4<sup>th</sup> Quarter</b>	3.7516	3.6578		
<b>Yearly Total</b>	15.3772	14.9928	7.6011	

## 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 usage 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
- Average miles per gallon 12.4

In the second quarter of 2009, Texas Tech vehicles averaged 11.4 miles per gallon. These figures represent a decrease in fuel efficiency of 1.4 miles per gallon (10.1%) compared to the second quarter of 2008. However, total fuel use is down 3561 gallons (3.3%) and total mileage is down by 26,000 miles. This conservation has been accomplished largely because the university has made increased use of its 42 nonconventional utility vehicles. The university acquired two more nonconventional vehicles this fiscal year.

**Table III: Historical University Vehicle Fleet Data**

	<b>Miles</b>	<b>Fuel</b>	<b>Miles Per Gallon</b>
<b>1<sup>st</sup> Quarter 08</b>	662,092	63,868	10.3
<b>2<sup>nd</sup> Quarter 08</b>	546,135	42,657	12.8
<b>3<sup>rd</sup> Quarter 08</b>	714,926	58,007	12.3
<b>4<sup>th</sup> Quarter 08</b>	671,156	57,835	11.6
<b>1<sup>st</sup> Quarter 09</b>	654,959	56,582	11.6
<b>2<sup>nd</sup> Quarter 09</b>	527,121	46,382	11.4

**B. Current Energy Reduction Plans**

**1. Campus Energy Use**

**E&G**

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

- 1) AHU VFD Project – Estimated cost of \$600,000 with a payback of 2.3 years. Project is 99% complete and should be finished by May 09. Since last report, the energy savings which were projected by ESA, Inc. have been validated on the university's electrical bills.
- 2) International Textile Center Performance Contract - \$573,000 with a 6 year payback. Project is 100% functional and the final report should be complete by May 2009. Since last report, the energy savings which were projected by Johnson Controls, Inc. has been validated on the university's electrical bills.
- 3) CHACP I Stack Heat Recovery - \$800,000 with an estimated 1.9 year payback. The engineering consultant, Fanning, Fanning and Associates, Inc., is preparing the construction documents for bidding.
- 4) CHACP II Stack Heat Recovery - \$500,000 with an estimated 3.6 year payback. Fanning, Fanning and Associates, Inc is preparing the construction documents for bidding.

### **Auxiliaries**

In addition, 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.
- b. Perform a minimum of 1 detailed energy audit per month beginning with the largest consumers of energy.
- 1) Texas Tech completed 1 detailed energy audit at Food Technology 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 seventy new, more efficient vehicles since the Governor's executive order.

- 2) Continue the aggressive Preventative Maintenance program to maintain all vehicles at their peak efficiency.

Routinely, notices are sent to all vehicle custodians advising when preventive maintenance services are needed.

- 3) Continue to utilize the State's Fleet Data Management System.
- 4) Educate personnel on the efficient use of University vehicles.
- 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.