Angelo State University Energy Savings Program
October 30, 2014

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

A. Energy Goals

1. Campus Energy Use

Energy units are converted to kBtu to allow for comparisons of electricity and natural gas usage. Goals and energy use are then 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. It does not take into consideration the climate difference between periods.

In the fiscal year for 2014 the entire campus used 81.59 kBtu/Sq Ft. That was an increase of 1.8% from the previous year, with an estimated expenditure of $40,721. This is the additional cost based on the criteria listed above and the change from the previous year. However, the price of electricity dropped so much from a new agreement that started June 2013 that the **actual dollar savings** from the previous year was **$1,058,885**.

In Table I, the campus energy use is broken down by utility type. The percent change column is the energy usage change from fiscal year 2013 to 2014.

Table I: Campus Energy Use (kBtu/Sq ft): FY2011-FY2014

Utility	FY11	FY12	FY13	FY14	% Change	Est. Savings
Electricity	61.2330	59.9600	58.1001	58.8849	Up 1.35%	($30,778.04)
Nat. Gas	23.0541	23.5200	22.0047	22.7052	Up 3.18%	($9,942.71)
Total	84.2871	83.4800	80.1048	81.5901	Up 1.85%	($40,720.76)

In Table II, the campus energy is broken down to compare FY2011 to FY2014; it shows a 3.2% decrease in overall kBtu usage per square feet. The savings is calculated from the usage change in the utility and the current price paid for that utility. The actual cost savings from FY2011 to FY2014 was $952,351.

Table II: Campus Energy Use (kBtu/sq ft): Change from FY2011 to FY2014

Utility	FY 2011	FY 2014	% Change	Est. Savings
Electricity	61.2330	58.8849	Down 3.84%	$92,089.93
Nat. Gas	23.0541	22.7052	Down 1.51%	$4,952.41
Total	84.2871	81.5901	Down 3.20%	$97,042.34

2. House Bill 3693

In Compliance with House Bill 3693, Angelo State University set a goal to reduce total electrical consumption by 2% for Fiscal Year 2014. Table III below shows the kilowatt hours per square foot for the entire campus quarterly. This is all electrical usage whether it is in a building or on the grounds. It shows a 1.35% increase for fiscal year 2014 as compared to the previous year. However, it also shows a 4.8% decrease from FY2011 to FY2014, but a 9% decrease over 6 years.

Table III: Entire Campus Electricity Usage in kwh/sq ft

Fiscal Year Quarter	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	% change from previous year
1st Qtr	5.21	4.82	4.76	4.78	4.61	4.43	4.57	3.16%
2nd Qtr	4.50	4.36	4.41	4.34	4.10	4.00	4.03	0.75%
3rd Qtr	4.52	4.54	4.04	4.33	4.15	4.04	4.13	2.23%
4th Qtr	4.72	4.98	4.81	4.67	4.67	4.55	4.52	-0.66%
Yearly Total	18.95	18.70	18.02	18.12	17.53	17.02	17.25	1.35%

3. Fleet Management

In FY2013, Angelo State University consumed 20,070 gallons of fuel and traveled 225,630 miles. In FY2014, Angelo State University consumed 21,467 gallons of fuel and traveled 233,940 miles. This represents a 3% decrease in fuel efficiency from the previous year. There average price per gallon dropped by 8.7% for FY2014 being $3.10.

In Table IV the vehicle fleet is broken down by number of vehicles, miles driven, gallons used, cost of those gallons, cost per mile and miles per gallon for fiscal years 2006 thru 2012.

Table IV: Fleet Vehicle Usage: FY2008 - FY2014

Vehicles	Number	Miles	Gallons	Cost	Cost Per Mile	Miles Per Gallon
FY2008	63	298,905	25,318	$81,288	$0.2720	11.8060
FY2009	67	331,717	29,243	$66,231	$0.1997	11.3435
FY2010	71	296,695	26,862	$68,441	$0.2307	11.0452
FY2011	69	300,579	27,155	$85,071	$0.2830	11.0691
FY2012	67	291,577	26,389	$90,815	$0.3115	11.0490
FY2013	67	225,630	20,070	$68,108	$0.3019	11.2424
FY2014	66	233,940	21,467	$66,515	$0.2843	10.8977

At the end of FY2014 there were 66 vehicles in the university's fleet. Seventeen of those vehicles are 2009 year models or newer. This makes 17 vehicles that are 5 years old or newer – 26% of the fleet. However, the university also has 39 vehicles that are 10 years old or older, which leads to the issues in or efficiency problems.

In Table V the miles per gallon is shown broken down by each fiscal quarter with the fiscal year summary on the right side. The university goal is still to be at 12 MPG and by focusing on improving the efficiencies of the older vehicles that is obtainable. The university reached that goal for the first quarter of fiscal year 2013.

Table V: Historical Efficiency of Vehicle Fleet in MPG

MPG	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual
FY07	11.6	10.7	11.8	12.1	11.6
FY08	11.9	12	12.4	12.1	11.8
FY09	11.6	11.6	11.9	10.1	11.3
FY10	11.5	11	11	10.6	11
FY11	11.3	10.8	11.1	11.1	11.1
FY12	12	10.7	11	10.3	11
FY13	12.3	11.6	10.3	9.9	11.2
FY14	11	11.1	10.6	10.8	10.9

B. Current Energy Reduction Plans

1. Campus Energy Use

A) Continue to monitor the upgrades/replacements to air handlers, electrical equipment and items at the central plant as according to the performance contract Angelo State University has with Tour Andover Controls (TAC). This is a $13 million dollar energy savings project for the university that is to be paid over the next 15 years (2021) with the money saved from the improvements. The installations were completed in February 2009.

B) Maintain consistent temperatures across campus and don't deviate to please individuals. The university has changed the original set points in order to save even more energy. For Cooling, a set point of 74 degrees (73 degrees was the original). For Heating, a set point of 68 degrees (70 degrees was the original). This change was adopted by the university in January 2011.

C) The elimination of personal space heaters.

D) Informing and training personnel to turn off computers, monitors, printers and such when not in use and overnight.

E) Closely monitor the utility meters for discrepancies and unexpected usage amounts. Verify anomalies and correct problems.

F) Inform university policy makers on the worst energy performing buildings and try to eliminate or make those buildings more efficient.

G) In January 2015 the Student Government Association will start implementing a student-led energy conservation effort in the dormitories. The program focuses upon teaching students to turn out lights, set the AC at reasonable temperatures, and other simple energy saving steps that students can take. Essentially, it teaches them about how to be good stewards of their resources.

2. Fleet management

A) Continually improve overall fuel efficiency of fleet vehicles by replacing older, inefficient vehicles with newer, more efficient vehicles.

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

C) Continue to utilize the State's Fleet Data Management System. The Fleet Management office will continue to use the State Fleet database to monitor vehicle utilization, efficiency, maintenance and accuracy of vehicle reporting. Any discrepancies will immediately be addressed with appropriate vehicle custodians.

D) Educate personnel on the efficient use of University vehicles. The Fleet Management office has informed all vehicle custodians of Governor Perry's Executive Order and the university's established goal of 12 mpg.

E) Continue to expand the use of electric carts. ASU already has newer carts on order that are more efficient and plans to continue expanding the usage of carts over gas powered vehicles in years to come.

C. Future Energy Reduction Plans

1. Continue gathering data on the use of roof top solar cells for lowering the costs of electricity. Also continue working with Solar array plant that is planned to be built in the area to possible purchase power from them.

2. The continued infrastructure improvements and use of software monitoring and scheduling under the performance contract.

3. The Information Technology department is looking into different ways to lower the energy consumption of the 1800+ computers on campus.

4. Use energy efficient products when remodeling and expanding buildings. Plan for LEED certifications on any major expansions or new buildings.

D. Fuel Consumption Reduction Plans

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

2. For all parties to encourage facility technicians and other departments to use electric carts when at all possible.

3. The Fleet Management office will continue to use off site shops to keep the vehicles in the best condition possible to increase fuel efficiency.

4. When funds are available, acquire new vehicles and dispose of older less efficient ones.