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

1. 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 2009 the entire campus used 85.3 kBtu/Sq Ft. That was a decrease of 1.4% from the previous year with an estimated savings of $118,244. This is the savings based on the criteria listed above. The raw dollars saved as compared to last year was $184,555. This is greater due to the decrease in natural gas costs, we used more natural gas than the previous year, but the cost was less.

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 2008 to 2009.

Table I: Campus Energy Use (kBtu/Sq ft): FY2006-FY2009

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| --- | --- | --- | --- | --- | --- | --- |
| Utility | FY06 | FY07 | FY08 | FY09 | % Change | Est. Savings |
|  Electricity | 71.3345 | 65.1301 | 62.6497 | 60.0636 | Down 4.13% | $143,337.67  |
|  Nat. Gas | 41.1972 | 39.5368 | 23.8598 | 25.2445 | Up 5.8% | ($25,093.37) |
|  Total | 112.5317 | 104.6670 | 86.5096 | 85.3081 | Down 1.39% | $118,244.31  |

In Table II, the campus energy is broken down to compare only the second quarter of FY 2010 to the same time the previous year; it shows a 5.34% increase in overall usage. The increase in both natural gas and electricity is thought to be from the colder winter than last year. Natural gas shows almost a 5% increase in use, but since we currently have lower pricing for natural gas (from $9.45/mcf to $6.39/mcf) the university had a savings in costs. Even with the 5¾% increase in electricity there was a savings of $836 for the quarter, a savings due to a decrease in building square footage of the university.

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| Table II: Campus Energy Use (kbtu/sq ft): Dec 2009 – Feb 2010 For the Second Quarter of the Fiscal Year |
| Utility | FY 2009 | FY 2010 | % Change | Est. Savings |
| Electricity | 14.02 | 14.82 |  Up 5.71% | -$409.72 |
| Nat. Gas | 12.36 | 12.97 | Up 4.94% | $1,245.81 |
| Total | 26.38 | 27.79 | Up 5.34% | $836.09 |

* + 1. House Bill 3693

In Compliance with House Bill 3693, Angelo State University set a goal to reduce total electrical consumption by 2.5% for Fiscal Year 2010. 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 decrease in electrical consumption of 0.55% for the second quarter of fiscal year 2010 as compared to the previous year. It also shows almost a 14% reduction from the first quarter of fiscal year 2006 to 2010 and the steady decline that has occurred for each fiscal year.

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| Table III: Entire Campus Electricity Usage in kwh/sq ft |
| Fiscal YearQuarter | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | % change from previous year |
| 1st Qtr | 5.60 | 5.27 | 5.21 | 4.82 | 4.69 | -2.69% |
| 2nd Qtr | 5.04 | 4.65 | 4.50 | 4.36 | 4.34  | -0.55%  |
| 3rd Qtr | 4.96 | 4.40 | 4.52 | 4.54 |   |   |
| 4th Qtr | 4.70 | 4.77 | 4.72 | 4.98 |   |   |
| Yearly Total | 20.29 | 19.09 | 18.95 | 18.70 |   |   |

* + 1. Fleet Management

In FY2008, Angelo State University consumed 25,318 gallons of fuel and traveled 298,905 miles. In FY2009, Angelo State University consumed 29,243 gallons of fuel and traveled 331,717 miles. This represented a 4% decrease in the fuel efficiency from the previous year. However, due to the lower price of fuel there was a 19% decrease in the cost of fuel from the previous year. This gave ASU the lowest cost per mile in the past 4 years.

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 2009.

Table IV: Fleet Vehicle Usage: FY2006 - FY2009

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| --- | --- | --- | --- | --- | --- | --- |
| Vehicles | Number | Miles | Gallons | Cost | Cost PerMile | Miles PerGallon |
| FY2006 | 58 | 245,217 | 20,311 | $51,113 | $0.2084 | 12.0731 |
| FY2007 | 61 | 272,780 | 23,580 | $57,770 | $0.2118 | 11.5683 |
| FY2008 | 63 | 298,905 | 25,318 | $81,288 | $0.2720 | 11.8060 |
| FY2009 | 67 | 331,717 | 29,243 | $66,231 | $0.1997 | 11.3435 |

At the end of FY2009 there were 67 vehicles in the universities fleet. Eleven of those vehicles are one year old or newer. This makes 22 vehicles that are 5 years old or newer – 33% of the fleet. Having the percentage of newer vehicles continue to grow will help improve our efficiencies.

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.

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| Table V: Historical Efficiency of Vehicle Fleet in MPG |
| MPG | 1st Qtr | 2nd Qtr | 3rd Qtr | 4th Qtr | Annual |
| FY06 | 12.6 | 11.2 | 11.7 | 12.8 | 12.1 |
| 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 |   |   | 11.3 |

B. Current Energy Reduction Plans

1. Campus Energy Use
	1. 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.
	2. TAC has already finished retro fitting the outdoor lighting and building lighting across campus to more efficient fixtures and bulbs. They replaced faucets, showers, and toilets to low flow models. They also replaced some of the boilers and chillers for the central plant and many air handlers across campus. These changes are showing significant reductions in our usages.
	3. Maintain consistent temperatures across campus and don’t deviate to please individuals. For Cooling, a set point of 73 degrees. For Heating, a set point of 70 degrees. This was adopted by the university in September of 2008.
	4. Closely monitor the utility meters for discrepancies and unexpected usage amounts. Verify anomalies and correct problems.
2. Fleet management
	1. Improve overall fuel efficiency of fleet vehicles by replacing older, inefficient vehicles with newer, more efficient vehicles.

At the start of FY2010 the university had 1 all electric truck and 1 electric/gasoline hybrid sedan. There is 1 electric/gasoline hybrid SUV scheduled to be delivered January 25, 2010. Each of these vehicles replaced an older vehicle.

UPDATE: The hybrid SUV was put into service on March 5, 2010, replacing a 12 year old van that was disposed of.

* 1. Continue the aggressive Preventative Maintenance program to maintain all vehicles at their peak efficiency.

UPDATE: The university has recognized the worst performing vehicles and is taking measures to improve their efficiency or dispose of them.

* 1. 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.
	2. 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.
	3. 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.
2. The continued infrastructure improvements and use of software monitoring and scheduling under the performance contract.
3. TriStem was chosen to audit the university utility bills for discrepancies. The report is expected in mid 2010.
4. The Information Technology department is looking into different ways to lower the energy consumption of the 1800+ computers on campus.
5. 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.

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