Arkansas State University System

Sustainable Energy-Efficient Buildings Performance Report

Submitted to the
Arkansas State University Board of Trustees

December 6, 2013

Table of Contents

Executive Summary

The Arkansas General Assembly in 2009 passed Act 1494 which encouraged the conservation of energy and natural resources in buildings owned by public agencies and institutions of higher education. The primary goal of the legislation was to reduce total energy consumption by 20% by 2014 and 30% by 2017 when compared to FY2008. The specific strategies and efforts by each higher education institution to achieve these goals should be documented in a Strategic Energy Plan (StEP).

On December 11, 2009, the board of trustees of Arkansas State University System affirmed their commitment to energy conservation through sustainable design, construction and operation of campus buildings and approved a Conservation of Energy and Natural Resources Policy. This report is hereby submitted on behalf of all the campuses of the Arkansas State University System to document its compliance with the requirements of Act 1494. Rather than a consolidated report, each campus is presented discretely due to the diversity of age and purpose of the facilities.

Arkansas State University - Jonesboro

Strategic Energy Plan Report

Strategic Energy Plan

Fiscal Year 2013

November 11th, 2013

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TABLE OF CONTENTS

Strategic Energy Plan
Arkansas State University - Jonesboro

Executive Summary

Act 1494 of the 87th General Assembly Regular Session – 2009, promotes the conservation of energy and natural resources in buildings owned by public agencies and institutions of higher education with primary goals to reduce total energy consumption by 20% by 2014 and 30% by 2017 when compared to Fiscal Year 2008 (July 1, 2007 through June 30, 2008). Under its own governance, each institution of higher education shall develop and administer policies, procedures, and methods for compliance with the criteria, performance standards, and goals as detailed in Act 1494. The specific strategies and efforts by each higher education institution to achieve these goals should be documented in a Strategic Energy Plan (StEP). This StEP is hereby submitted on behalf of the Arkansas State University - Jonesboro (ASU-J), a state-supported institution of higher education, to document its compliance with the requirements of Act 1494.

The ASU-J campus, located in Jonesboro, Arkansas is a state-supported four-year plus graduate level institution consisting of approximately 214 individual buildings, 3.85 million gross square feet, including academic, research, student housing, athletic, and auxiliary spaces. ASU-J has transitioned from a pure academic institution to include significant research programs and facilities. Growth in enrollment and program areas has led to significant expansion of the building inventory, more than 600,000 gross square feet since 2000. The rapid growth presented challenges, but equally provided opportunities to incorporate energy conservation strategies as a campus standard. ASU-J is fully operationally sustainable on installing, programming, and maintaining a comprehensive Energy Management System (EMS) to optimize energy use efficiency. ASU-J has also completed the first district chilled water system in the campus history.

ASU-J Facilities Management utilizes sub-metering all buildings to catalog energy use. This data is consolidated in FAMIS, an enterprise facilities maintenance management software package. The energy use for fiscal year 2013 reflects a campus energy use index (EUI) of 115.4 kBtu/GSF/yr. The fiscal year 2008 is the benchmark year outlined in Act 1494, of which the campus EUI was 120.7 kBtu/GSF/yr. Fiscal year 2013 amounts decreased approximately 4% from the benchmark. The decrease could have been larger but was marked primarily by the extended hours of use of campus buildings due to individual research program growth, increased resident campus population, and increased international student population. The resulting decrease would also have been less significant had capital investment amounting to $840,213 had not been applied to boiler upgrades, installation of energy management controls, and lighting replacements as example projects. The identified energy savings from these projects has resulted in $36,332 in utility savings in FY2013.

The commitment to sustainability and energy efficiency for ASU-J will require a significant amount of capital investment to achieve the Act 1494 goals. A 20% and 30% reduction respectively by 2014 and 2017 will net EUI's of 96.6 kBtu/GSF/yr. and 84.5 kBtu/GSF/yr. The projects proposed herein demonstrate the funding need to achieve the identified energy conservation goals.

Key Performance Indicators

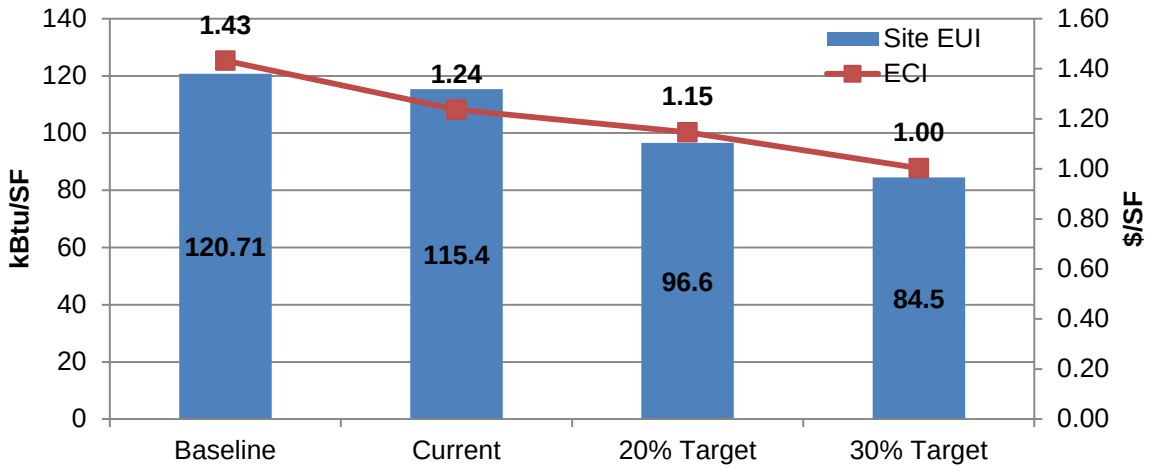
Key performance indicators typically refer to benchmark metrics used in determining energy and cost efficiencies of a facility. These metrics often include:

- Energy Use Index (EUI) - reflects the energy intensity of a facility in terms of 1000 British Thermal Units (Btus) per gross square foot (kBtu/GSF)
- Energy Cost Index (ECI) - reflects the energy cost intensity of a facility in terms of dollars per gross square foot ($/GSF).

District and distributed energy systems are employed throughout the campus to provide the necessary utility services to facilities including: chilled water, heating water, natural gas, electricity, and domestic water. Individual building metering is present on all facilities. However, determining individual building key performance indicators (KPI) is not a metric presented in this report. Individual building energy KPI's are monitored and reviewed to determine the buildings with the greatest potential for energy conservation projects. For the purpose of this report, ASU-J employs a campus-wide metric in its StEP with the use of available individual building metering when present.

The following table provides a summary of the key performance indicators for the ASU-J campus for the Baseline Period (Fiscal Year 2008), the Current Period, and Targeted levels based on a 20% and 30% reduction as stipulated by Act 1494. Annual costs for the baseline and current fiscal years are actual billed costs aggregated for electricity, and natural gas.

Metric	Baseline FY2008	Current FY2013	20% Target Reduction	30% Target Reduction
Site EUI (kBtu/SF)	120.71	115.4	96.6	84.5
Gross Floor Area (SF)	3,546,465	3,843,163	3,963,163	4,082,058
ECI ($/SF)	1.43	1.24	1.14	1.00
Annual Cost ($/Yr)	$5,079,137	$4,752,145	$4,540,735	$4,092,338



Goals and Strategies

ASU-J has been deeply committed to incorporating best energy conservation practices over the past decade of new construction and major renovations. The adoption of the campus sustainability policy by the trustees aligns with the goals established in Act 1494. Achievement of these goals will depend on the continued fiscal commitment too new construction and major renovation projects.

As demonstrated in the prior table, the campus EUI has decreased from the base year by approximately 4%. This decrease has been slowed by the dramatic increase of international and resident students from 2008 (in excess of 1400 students). This increase has extended operation hours at service centers such as the library and student union buildings.

Capital investments alone will not fulfill the eventual 20% and 30% targets. It is anticipated the unfunded capital projects listed herein will achieve a reduction of 9.37 kBtu/SF, or approximately a third of the targeted goal to 84.5 kBtu/SF by FY2017. The balance of the energy reduction will be achieved via self performed retro-commissioning, optimized building chilled water use, real-time energy performance reporting to building occupants, and optimized space utilization.

Act 1494 Performance Goals

- Reduce total energy use per gross square foot by twenty percent (20%) by the end of Fiscal Year 2014 (June 30, 2014).
- Reduce total energy use per gross square foot by thirty percent (30%) by the end of Fiscal Year 2017 (June 30, 2017).

Capital Projects FY13

The following information provides a summary of projects completed in FY2013

1. Convocation Center boiler replacement:
    a. This project will replace 24 year old heating and domestic boiler systems at the Convocation Center (207,507 SF)
    b. Capital Investment = $584,000
    c. Energy Savings = 3,438,000 kBtu/Year
    d. Annual Energy Cost Savings = $22,297
    e. Campus EUI Reduction = 0.78 kBtu/SF
    f. Planned Schedule: Sept, 2012 to October, 2012

2. Computer Science and Math (CSM) Lighting Upgrades
    a. This project provides the replacement of inefficient lighting and the addition of occupancy controls
    b. Capital Investment = $79,230
    c. Energy Savings = 128,448 kBtu/Year

d. Cost Savings = $ 6,679.30/Year
e. Campus EUI Reduction = 0.028 kBtu/SF
f. Planned Schedule: July 2012 – June 2013

3. Computer Science and Math (CSM) boiler replacement:
    a. This project will replace the old heating system
    b. Capital Investment = $95,502
    c. Energy Savings = 315,000 kBtu/Year
    d. Annual Energy Cost Savings = $2,297
    e. Campus EUI Reduction = 0.071 kBtu/SF
    f. Planned Schedule: Aug, 2012 to October, 2012

4. Computer Science and Math (CSM) Envelope Repair
    a. This project will seal up the building envelope (roof, windows, doors)
    b. Capital Investment = $25,188
    c. Energy Savings = 198,906 kBtu/Year
    d. Annual Energy Cost Savings = $1,588
    e. Campus EUI Reduction = 0.044 kBtu/SF
    f. Planned Schedule: June, 2013 to Aug , 2013

5. Various Lighting Upgrades- classroom renovations
    a. This project provides the replacement of inefficient lighting and the addition of occupancy controls
    b. Capital Investment = $56,293
    c. Energy Savings = 64,663 kBtu/Year
    d. Cost Savings = $3,471/Year
    e. Campus EUI Reduction = 0.014 kBtu/SF
    f. Planned Schedule: July 2012 – June 2013

Future Identified Capital Projects

The following information provides a summary of identified projects that ASU-J is expected to pursue.

1 Upgrade Interior Campus Lighting and Install Occupancy Lighting Controls
    g. This project provides the replacement of inefficient T-12 interior lighting systems and the installation of occupancy controls in all major campus buildings

h. Capital Investment = $2,500,000

i. Energy Savings = 13,983,683 kBtu/Year

j. Cost Savings = $149,633/Year

k. Campus EUI Reduction = 3.64 kBtu/SF

l. Planned Schedule: On going

2 Campus Central Chilled Water Plant Expansion

a. Install additional (2) base load campus chillers to central plant

b. Optimize all campus buildings for differential pressure control to ensure variable flow on the campus chilled water loop

c. Optimize chiller plant sequencing controls between the central plant, Convocation Center Plant, and HPESS.

d. Capital Investment = $1,475,000

e. Energy Savings = 9,120,276 kBtu/Year

f. Cost Savings = $112,266 /Year

g. Campus EUI Reduction = 2.37

h. Planned Schedule: June 2014 – July 2015

3 HPESS building boiler replacement:

a. This project will replace a 39 year old heating boiler (building and pool) system at the HPESS building (131,566 SF)

b. Capital Investment = $208,107

c. Energy Savings = 1,474,600 kBtu/Year

d. Annual Energy Cost Savings = $9,437

e. Campus EUI Reduction = 0.38 kBtu/SF

f. Planned Schedule: TBD

4 College of Agriculture boiler replacement:

a. This project will replace a 24 year old heating boiler system at the College of Agriculture building (73,256 SF)

b. Capital Investment = $149,000

c. Energy Savings = 2,078,700 kBtu/Year

d. Cost Savings = $8,950/Year

e. Campus EUI Reduction = 0.36 kBtu/SF

f. Planned Schedule: TBD

5 HPESS (PE Building) Lighting Upgrades

a. This project provides the replacement of inefficient lighting and the addition of occupancy and day lighting controls

b. Capital Investment = $156,293

c. Energy Savings = 850,663 kBtu/Year

d. Cost Savings = $10,471/Year

e. Campus EUI Reduction = 0.22 kBtu/SF

f. Planned Schedule: June 2011 – June 2012

6 Retro-Commissioning of the Arkansas Biosciences Institute

a. This project provides for the retro-commissioning of the Arkansas Biosciences Institute building, projected a minimum of 10% annual energy savings

b. Capital Investment = $1,320,000

c. Energy Savings = 3,945,000 kBtu/Year

d. Energy Cost Savings = $31,022 /Year

e. Campus EUI Reduction = 1.03 kBtu/SF

f. Planned Schedule: July 2014 – March 2015

7 Dean B. Ellis Library Boiler System Retrofit

a. This project replaces the existing steam boiler system with high efficiency hot water heating system

b. This will require replacement of steam coils on (9) air handlers

c. Capital Investment = $625,000

d. Energy Savings = 2,678,600 kBtu/Year

e. Energy Cost Savings = $17,143 /Year

f. Campus EUI Reduction = 0.70 kBtu/SF

g. Planned Schedule: TBD

8 Lab Sciences Boiler System Retrofit

a. This project replaces the existing steam boiler system with high efficiency hot water heating system

b. This will require replacement of steam coils on (7) air handlers

c. Capital Investment = $675,000

d. Energy Savings = 2,587,500 kBtu/Year

e. Energy Cost Savings = $16,560 /Year

f. Campus EUI Reduction = 0.67 kBtu/SF

g. Planned Schedule: TBD

Future Capital Project Summary

Project Number	Capital Investment ($)	Energy Savings (kBtu/Yr)	Cost Savings ($/Yr)	EUI Reduction (kBtu/SF)	Scheduled Completion
1	$2,500,000	13,983,683	$149,663	3.64	On going
2	1,475,000	9,120,276	112,266	2.37	Jun-15
3	208,107	1,474,600	9,437	0.38	TBD
4	149,000	2,078,700	8,950	0.36	TBD
5	156,293	850,663	10,471	0.22	TBD
6	1,320,000	3,945,000	31,022	1.03	Jun-15
7	625,000	2,678,600	17,143	0.70	TBD
8	675,000	2,587,500	16,560	0.67	TBD
Total	**$7,108,400**	**36,719,022**	**$355,512**	**9.37**	**TBD**

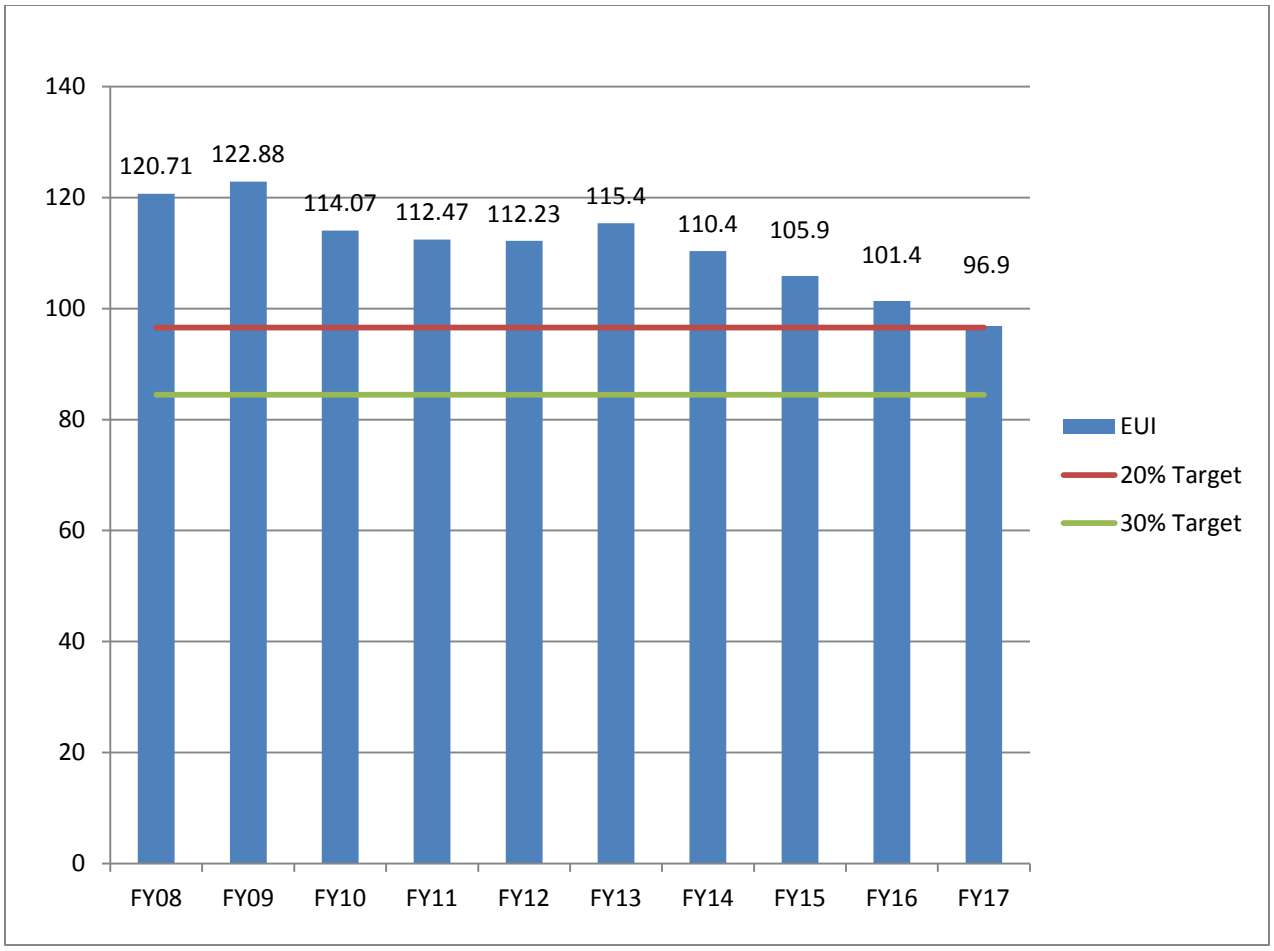
Summary and Conclusion

ASU's commitment to energy conservation is historically demonstrated with the low campus EUI relative to other peer institutions. Per recent APPA (the professional organization for leadership in educational facilities) survey, ASU-J energy use index was lower than 71% of peer Carnegie Class institutions, while having one of the lowest utility rates in the country. The achievement of the Act 1494 goals will position ASU-J to having one of the lowest medium to large campus EUI's in the United States.

One of the challenges, to meeting Act 1494 energy conservation, is the performance indicator does not take into account occupant density. ASU has been able to lower it's indicator by 4 % even though we have seen an increase in FTE students staff and faculty of 15%. The campus sq. ft. only grew by 8% during this 15% FTE increase so space utilization is better but increased occupants increase demand and hours of operation.

The Projects identified in this StEP program alone are not expected to meet the 20% and 30% energy reduction goals. These projects are a critical component in the holistic energy management best practices underway toward achieving the performance goals. Energy optimization will be addressed by these capital projects coupled with building systems scheduling matching occupancy loading, retro–commissioning and continuous commissioning, and energy management control sequence optimization.

Forecasted Energy Use Index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FY14
FY15
FY16
FY17
EUI
20% Target
30% Target

Arkansas State University - Beebe

Strategic Energy Plan Report

Strategic Energy Plan

Arkansas State University-Beebe

Fiscal Year 2013

November 15, 2013

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TABLE OF CONTENTS

Strategic Energy Plan

Arkansas State University-Beebe

Executive Summary

The 87th General Assembly of 2009 enacted Act 1494 requiring agencies of the state and higher education institutions to conserve energy. Goals were set in the act to reduce energy consumption 20% by 2014 and 30% by 2017. Institutions of higher education are permitted to govern its own policies, procedures and compliance with the criteria, performance standards, and goals as detailed in Act 1494. The Board of Trustees of Arkansas State University approved a Conservation of Energy and Natural Resources Policy by resolution (09-93) in December of 2009. The policy contained procedures to meet compliance of Act 1494.

The strategies by each higher education institution should be documented in a Strategic Energy Plan (StEP). The StEP of Arkansas State University-Beebe (ASU-Beebe) is prepared in accordance with the requirements of Act 1494.

ASU-Beebe is a two-year college awarding certificates of proficiency, technical certificates and associate degrees. ASU-Beebe has had tremendous growth in student enrollment and facilities in the last decade. The university has campuses in Beebe, Searcy and Heber Springs. Additionally, the university has an offsite program at the LRAFB but facilities are owned and provided by the Air Force, therefore, that site will not be included in this StEP. The Beebe campus has a total of 34 buildings with 468,519 in total square footage. The Searcy campus has 15 buildings with 122,374 in total square footage. The campus at Heber Springs has 4 buildings with 101,550 in total square footage. Total footage for all three sites is 692,443 square feet.

The university has initiated many projects to conserve energy since the enactment of Act 1494. Additionally, ASU-Beebe has adopted energy management initiatives and practices to control the use of valuable energy resources. Renovation projects have included measures to conserve energy whenever possible, even when the projects did not meet the requirement of a major renovation. The university has replaced mechanical units with more efficient systems when funds have been available. Having available financial resources has been the major barrier for pursuing some of the items detailed in the plan.

The following is a list of facilities located on the Beebe campus

Facility	Year Built	Floor AREA (GSF)
Abington Library	1973	27,014
Admissions	1934	4,200
Advanced Tech Center	1991	18,350
Advanced Tech Center/Add.	1991	5,480
Business & Agriculture	1993	24,500
Career Pathways	1980	900
England Center	1972	19,290
Farm Classroom/Arena	2001	13,864
Farm Manager House	1962	2,079
Farm Storage & Shop	2001	3,324
Hay Barn	2001	5,256
Grounds Shop	1947	2,486
Horizon Hall	2011	28,700
Howell Center	1965	16,009
Human Resources	1966	1,488
John Deere Ag Tech	1996	9,592
Legacy Hall	2011	28,700
M & R Storage	1962	1,800
Owen Center/Fine Arts	1976	27,008
Owen Center/Phase III	1982	22,220
Owen Center/PE	1977	24,029
Purchasing/Physical Plant	2001	18,314
Rent House - 1201 Iowa	1964	1,100
Rent House - 804 W. Iowa	1976	2,700
Rent House - 1106 Center	1951	1,612
Rent House - 813 Orange	1966	2,773
Rent House - 1108 Indiana	1970	1,352
Rent House - 1106 Indiana	1967	1,040
Ruth L. Couch Bldg.	1938	3,882
Science Bldg.	2007	60,000
Shurley Greenhouse	2003	1,152
State Hall	1938	27,920
Storage - Center Street	1956	1,404
Storage - Physical Plant	1974	2,400
Student Center	2000	32,800
University Center Phase I	1999	10,528
University Center Phase II	2000	7,253
Vet Tech	2008	6,000
Total Beebe		**468,519**

The following is a list of the facilities located on the Searcy campus

Facility	Year Built	Floor Area (GSF)
Auto Body Shop	1988	7,029
Automotive	1965	19,700
Bloodworth Nursing I	1995	10,626
Diesel Shop	2008	12,500
Drilling Program Office	1979	854
Early Childhood Development	1982	1,150
Elete Classroom	1982	1,150
HVAC Shop	1974	3,750
Learning/Computer Lab	1982	1,150
Main Building Phase I-V	1965	30,430
Maintenance Shop	2008	4,000
Storage I	1975	2,160
Technology East	2008	6,800
Technology West	2008	15,000
Welding	1977	6,075
Total Searcy		**122,374**

The following is a list of facilities located on the Heber Springs campus

Facility	Year Built	Floor Area (GSF)
Academic Building	2007	43,450
Administration/Student Serv.	2007	29,400
Central Plant	2007	4,000
Latimer Building	2001	24,700
Total Heber Springs		**101,550**
GRAND TOTAL		**692,443**

Completed Projects through FY 2013

Beebe Campus:

1. Partnered with CLEAResults Consulting, a firm contracted by Entergy, to perform energy audits on all campus facilities.

2. Performed AC Split System tune-ups on 59 units. The tune-ups were recommended in the energy audits performed by CLEAResults and qualified the university for partial funding from Entergy through their Large Commercial and Industrial (C&I) Program.

3. Replaced inefficient T-12 bulbs and ballasts by retrofitting existing fixtures to T-8 bulbs and ballasts. The number of fixtures retrofitted was 1,250. This project was also a result of the energy audits and qualified for assistance from the Entergy C&I Program.

4. Replaced faucet aerators from 2.0 GPM to 1.0 GPM or .5 GPM. This was a program sponsored by Centerpoint as part of the company's C&I Program. There was no cost to the university for this Project.

5. Renovated the England Center, a former Math and Science classroom building, for use by Art and Criminal Justice. The project included the following energy saving items.
    - Replaced four (4) old split HVAC systems with newer and more energy efficient units.
    - Replaced T-12 light fixtures with T-8 fixtures.
    - Overlaid 3" of insulation and torch down roofing to existing 1-1/2" insulated roof.
    - Installed waterless urinals in men's restrooms.
    - Replaced exterior windows with new energy efficient insulated windows.
    - Insulated interior surface of exterior walls with 1" Styrofoam insulation covered by 5/8" sheetrock. Walls were concrete block.

6. Renovated Howell Center, a residence hall remodeled to accommodate an expansion of the Music Department. The project included the following energy saving items.
    - Replaced window air conditioning units with an energy efficient central HVAC system.
    - Installed controls and hardware to accommodate the existing campus energy management system.
    - Occupancy lighting was installed.
    - Closed old inefficient restroom and replaced with new restroom containing efficient bathroom appliances.

7. Overlaid roof of Business & Agriculture classroom building. Installed 2" insulation over existing roof and installed light reflective white 60 Mil PVC roof cover.

8. Replaced all exterior windows on the State Hall Building at a cost of over $100,000. This building serves as the administration building and was built in 1938.

Searcy Campus:

1. Performed AC Split System tune-ups on 15 units. The tune-ups were recommended in the energy audits performed by CLEAResults and qualified the university for partial funding from Entergy through their Large Commercial and Industrial (C&I) Program.

2. Replaced inefficient T-12 bulbs and ballasts by retrofitting existing fixtures to T-8 bulbs and ballasts. The number of fixtures retrofitted was 300. This project was a result of the energy audits and qualified for assistance from the Entergy C&I Program.

3. Renovated the Main Building providing a remodeled Student Services area. The project included the following energy saving items.
    - Replaced all T-12 light fixtures with energy efficient T-8 fixtures.
    - Added two (2) sets of double doors at entries to help reduce loss of conditioned air in building.
    - Replaced old, poorly insulated HVAC duct work.
    - Insulated interior surface of exterior walls with 1" Styrofoam insulation covered by 5/8" sheetrock.

4. Replaced old ceiling-mounted gas furnaces in automotive shop with new energy efficient units.

5. Overlaid the metal roof of the automotive shop with 1" insulation board and added new reflective metal panels to reduce heat loss during cold weather.

Heber Springs Campus:

1. Mechanical upgrades were made to the Latimer Center.
    - Building had no return aid duct work. Installed insulated duct work to every classroom and office.

- Installed an Energy Management System in the building.

Performance Indicators

Performance indicators refer to benchmark metrics used in determining energy and cost efficiencies of a facility. Metrics used in this StEP plan include:

- Energy Use Index (EUI) – reflects the energy intensity of a facility in terms of 1000 British Thermal Units (Btus) per gross square foot (kBtu/GSF)

- Energy Cost Index (ECI) – reflects the energy cost intensity of a facility in terms of dollars per gross square foot ($/GSF)

The following table provides a summary of the key performance indicators for ASU-Beebe for the baseline period of fiscal year 2008, the current period of fiscal year 2013 and the target level of based on a 20% reduction as stipulated in ACT 1494. Annual costs are the baseline and current fiscal years actual billed costs for electricity and natural gas.

Metric	Baseline 2008	Current 2013	20% Target
EUI (kBtu/GSF)	82.05	80.61	65.64
Gross Floor Area	522,469	668,927	668,927
ECI ($/GSF)	$1.91	$1.59	$1.53
Annual Cost	$999,424	$1,061,167	$1,023,458

Goals

ASU-Beebe is committed to conserving energy. We made numerous changes to facilities to reduce usage and have enlisted the help of our entire campus community. We requested help from all employees in turning off lights and in exercising thermostat control in buildings not

currently on energy management systems. HVAC systems have been tuned and lighting fixtures have been replaced. Buildings have been renovated to include installing insulated windows, insulating exterior walls, replacing inefficient HVAC systems, replacing inefficient bathroom appliances and replacing roof systems with better insulated roofing materials.

As shown in the table above the university has a very low EUI rate in the base year of 2008 making it very difficult to achieve a 20% reduction by the end of fiscal year of 2014. We have been much more successful in reducing the ECI rate from $1.91 in the base year to $1.53 in FY2013. This represents a 17.1% reduction in the square foot cost. This has enabled the university to realize a total cost reduction at approximately $125,000 from FY 2009 to FY2013 while increasing total square footage by 28.0%.

ASU- Beebe will strive to continue to lower energy consumption but find it unrealistic to think we can lower the EUI rate by 20% by the target date. We base this assumption on the fact the EUI rate was very efficient in the base year of 2008. However, listed below are some items the university will target for completion in the near future.

1. Target four buildings on the Beebe for addition to the energy management system. This will require installing controls and hardware in each of the buildings.

2. Install an energy management system for the Searcy campus. Searcy has some digital thermostats but currently has no facilities on an energy management system.

3. Overlay the existing roof of the Advanced Technology Building with 2” insulation and 60 MIL PVC roof system.

4. Install occupancy lighting systems in existing buildings as funds allow.

Conclusion

ASU-Beebe has made significant gain in lowering the cost of utilities while making some gain on the use per square foot. We will continue identifying opportunities for lowering energy consumption and will pursue those opportunities as funds will allow.

Arkansas State University – Mountain Home

Strategic Energy Plan Report

ARKANSAS STATE UNIVERSITY MOUNTAIN HOME

Strategic Energy Plan

Fiscal Year 2013

November 15, 2013

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TABLE OF CONTENTS

Strategic Energy Plan

Arkansas State University-Mountain Home

Executive Summary

Act 1494 of 2009, required all state agencies and higher education institutions to promote the conservation of energy and natural resources in publically owned buildings. Goals set in the act included a reduction in energy consumption of 20% by 2014 and 30% by 2017. Institutions of higher education are permitted to develop and administer policies, procedures, and methods for compliance with the criteria, performance standards, and goals as detailed in Act 1494. The Board of Trustees of Arkansas State University approved a Conservation of Energy and Natural Resources Policy by resolution (09-93) in December of 2009. The policy contained procedures to meet compliance of Act 1494.

The strategies by each higher education institution should be documented in a Strategic Energy Plan (StEP). The StEP of Arkansas State University-Mountain Home (ASUMH) has been prepared in accordance with the requirements of Act 1494.

ASUMH is a two-year college awarding certificates of proficiency, technical certificates, and associate degrees. From 2007-08, the baseline year for the StEP, ASUMH has had tremendous growth in student enrollment and facilities. Student enrollment has increased 22.6 percent, from 1,179 to 1,446 headcount. Total facilities square footage has increased 78.8 percent, from 114,085 to 204,073 square feet.

In the absence of significant financial resources for use in energy conservation projects, ASUMH has adopted many “common sense” practices to conserve energy since the enactment of Act 1494. Additionally, ASUMH applied for and received American Recovery and Reinvestment Act (ARRA) funds to complete one major project, resulting in a significant reduction in energy consumption.

Facility Listing

The following table lists all facilities located on the ASUMH campus.

Facility	Year Built	Floor Area (GSF)
Roller Hall	2000	32,400
Dryer Hall	2000	20,997
Integrity First Hall	2000	20,276
McClain Hall	2000	23,041
Central Plant	2000	1,474
Physical Plant	2006	9,530
Gotaas Hall	2008	24,988
Welding Shop	1985	2,400
Vada Sheid Center	2009	65,000
Career Pathways	1984	2,986
Human Resources	1967	981
TOTAL		204,073

Completed Projects through FY 2013

1. Implemented campus-wide use of HVAC multiple occupancy set points. This system sets heating and cooling temperatures in an "unoccupied" status at times when buildings are not in use. There was no cost to the university.

2. Developed a campus procedure that effectively removed all personal space heaters, fans, refrigerators, and microwaves from individual offices unless medically necessary. There was no cost to the university.

3. Upgraded HVAC controls system, which included the replacement of over 200 terminal controllers, transducers, space temperature sensors, thermostats, humidity sensors, and upgraded computerized software controls system. The cost of this project was $315,000 and was funded through an ARRA grant.

4. Replaced faucet aerators from 1.0 GPM to .5 GPM. This was a program sponsored by Centerpoint as part of the company's C&I Energy Efficiency Program. There was no cost to the university for this Project.

5. Installed software program to shut down all computer labs after the final class daily.

6. Upgraded and modified exterior lighting fixtures as part of routine maintenance and replacement of fixtures.

Performance Indicators

Performance indicators refer to benchmark metrics used in determining energy and cost efficiencies of a facility. Metrics used in this StEP plan include:

- Energy Use Index (EUI) – reflects the energy intensity of a facility in terms of 1000 British Thermal Units (Btus) per gross square foot (kBtu/GSF)
- Energy Cost Index (ECI) – reflects the energy cost intensity of a facility in terms of dollars per gross square foot ($/GSF)

The following table provides a summary of the key performance indicators for ASUMH for the baseline period of fiscal year 2008, the current period of fiscal year 2013, and the target level of based on a 20% reduction as stipulated in ACT 1494. Annual costs are the baseline and current fiscal years actual billed costs for electricity and natural gas.

Metric	Baseline 2008	Current 2013	20% Target
EUI (kBtu/GSF)	117.0	69.7	93.6
Gross Floor Area	114,085	204,073	204,073
ECI ($/GSF)	$2.69	$1.61	$2.15
Annual Cost	$306,973	$329,555	$438,757

Goals

ASUMH began its commitment to conserving energy prior to the passage of Act 1494, in an attempt to conserve budget dollars for use on other university needs. We began using our energy management systems during fiscal year 2009 and realized a great deal of success. We requested help from all employees in turning off lights, removing unnecessary personal items, and in understanding the need to restrict the degree of temperature control. HVAC and exterior lighting systems have been upgraded and finely tuned. Facilities staff continues to learn and improve energy control systems.

Goals for the future include an emphasis on efficient facilities scheduling and utilization, lighting occupancy systems, LED lighting projects, and window replacements. These projects will require substantial capital investment at a time when capital funds are difficult to acquire. Current EUI projections for 2014 indicate a 28.5 percent reduction from the 2008 baseline, which does surpass the 20 percent target. We are still optimistic that the 30 percent goal is achievable in 2017.

Conclusion

ASUMH has made significant progress in reducing energy consumption and lowering the energy cost per square foot. Using the 2008 ECI at the 2013 GSF, ASUMH has saved $235,000 in additional utilities expenditures. It is anticipated that both EUI and ECI will increase during 2014 and 2015 as a large portion of the Vada Sheid Center, which was previously unoccupied and incomplete, will be completed and utilized for administrative offices. ASUMH continues to seek opportunities for lowering energy consumption and will pursue those opportunities as funds will allow.

Arkansas State University – Newport

Strategic Energy Plan Report

Strategic Energy Plan

Fiscal Year 2013

11/29/2013

Executive Summary

With the passage of Act 1494 of the 87th General Assembly in 2009, higher education institutions and public agencies were charged with conservation of energy and natural resources in public owned buildings. Goals were established to reduce energy consumption 20% by 2014 and 30% by 2017. These reduction goals are in comparison to the base year of Fiscal Year 2008. The Board of Trustees of Arkansas State University approved a Conservation of Energy and Natural Resources Policy by resolution (09-93) in December of 2009.

The conservation strategies of a higher education institution should be presented as part of a strategic energy plan (StEP). The StEP for Arkansas State University-Newport is formulated in accordance with Act 1494 and ASU Board resolution 09-93.

Arkansas State University-Newport (ASUN) is a two-year college that offers certificates of proficiency, technical certificates and associate degrees. ASUN has experienced a tremendous amount of growth in the past decade since it became a stand-alone institution in 2001. From 2006 to 2010, student headcount has increased by 118%. Three campuses make up the Arkansas State University-Newport institution with locations in Newport, Jonesboro, and Marked Tree. The total footprint of the campuses includes 24 buildings with total square footage of 328,414 and approximately 189 acres in three counties.

ASUN has undergone several significant projects and enacted conservation measures to conserve energy and natural resources since the passage of Act 1494. The university has purchased updated equipment and components to allow for greater efficiency as budgets have allowed and as equipment has expired. The university was able to utilize American Recovery and Reinvestment Act funds to renovate and update facilities on the Marked Tree Campus that has resulted in reductions in energy consumption. Funds from other sources have also been utilized to update facilities to allow for greater conservation of energy. ASUN has also changed internal practices with existing equipment that has benefited the university extensively in the area of conservation.

Facility Listing

The following table is a complete listing of all facilities located on the three ASUN campuses.

Arkansas State University-Newport Facilities Inventory Listing		
Building	**Year Constructed**	**Square Footage**
Newport Campus		
White River Hall	1975	30,000
Center for the Arts	2000	20,852
Storage Building	1980	4,500
Maintenance Building	1975	3,460
Technology Education Building	1986	6,000
Dwelling	1977	1,050
Walton Hall Total	1994	64,269
Warehouse Storage	1970	9,312
Student Community Center	2005	35,228
Truck Driver Training Classroom	2005	2,035
Diesel Technology	2008	8,000
HVLT Equipment Storage	2007	3,456
Transportation Tech. Center	2008	14,800
Total Newport Campus		**202,962**
Jonesboro Campus		
Health Occupation/WTC (Krueger Dr.)	1997	28,535
Storage Building	2009	2,400
Nursing and Allied Health Building	2011	7,737
Fowler Family Hospitality Education Building	2013	11,826
Physical Plant Building	2013	4,400
Total Jonesboro Campus		**54,898**
Marked Tree Campus		
Administration-Bldg. A	1967	25,183
Maintenance Storage Bldg.	1969	2,880
Auto Technology-Bldg B	1973	12,096
Electronics/Energy Control/Welding-Bldg C	1981	14,175
Bus Education - Bldg D	1987	4,720
Collision Repair Center	2011	11,500
Total Marked Tree Campus		**70,554**
Total		**328,414**

Completed Projects through FY 2013

Since 2008, ASU-Newport has undergone several projects and initiatives that have provided energy savings to the campuses. The campuses at Jonesboro and Marked Tree have undergone extensive renovations to all existing buildings that encompassed the original infrastructure of the campuses. Through renovations ASUN has been able to replace aged HVAC equipment and upgrade to energy efficient lighting fixtures. Additionally at Marked Tree, windows have been replaced to greatly impact energy efficiency in the campus buildings. At Newport, computerized software controlled thermostats have been added to a number of existing buildings. The remaining manual thermostats have been replaced with electronic programmable thermostats.

The campuses have reduced or eliminated non-essential appliances such as personal heaters and fans, refrigerators, and microwaves. HVAC controls have been programmed to higher set points to minimize electricity and natural gas usage when buildings are un-occupied. ASUN also utilized a no-cost program offered by Centerpoint Energy to replaced faucet aerators with low flow technology. The college has also taken advantage of the Entergy Cool Savers program at its campuses to fine-tine HVAC to run at optimal efficiency, at a very minimal cost to the university. The campuses have replaced all inefficient t-12 bulbs and ballast through retrofit, upgrading to T-8 bulbs. Also, the college has worked with energy consultants to reduce lighting while still maintaining industry standards. This was a no-cost initiative that has reduced costs in a number of campus buildings. Where possible, the college has used occupancy sensors in buildings to reduce lighting usage.

Future projects are planned by ASUN as funds become available. Such activities include: expanding computerized HVAC controls to additional campus buildings, upgrading lighting through utilization of grant opportunities, replacing aged HVAC equipment in Samuel Walton Hall on the Newport campus, and expanding the use of occupancy controls in additional areas.

Performance Indicators

Performance indicators refer to benchmark metrics used in gauging energy and cost efficiencies of a facility. The metrics used in ASUN's StEP plan include:

- Energy Use Index (EUI) – reflects the energy intensity of a facility in units of 1000 British Thermal Units (BTU) per gross square foot (kBtu/GSF)
- Energy Cost Index (ECI) – reflects the energy cost intensity of a facility in units of dollars per gross square foot ($/GSF)

The accompanying table provides a summary of the performance indicators for ASUN for the baseline period of Fiscal Year 2008, the current period of fiscal year 2013, and the target level based on a 20% reduction stipulated in ACT 1494. Annual costs are the baseline and current fiscal years actual billed costs for electricity and natural gas.

Metric	Baseline 2008	Current 2013	20% Target
EUI (kBtu/GSF)	77.6	57.2	62.1
Gross Floor Area	270,151	312,188	312,188
ECI ($/GSF)	1.46	1.07	1.17
Annual Cost	394,994	332,671	365,166

Conclusion

ASU-Newport has made significant improvements to gain cost savings in utilities utilization, even as the campus has aggressively added buildings and remodeled facilities to meet the needs of our growing campuses. As we have developed most of the infrastructure to meet the needs of the future, we are targeting energy efficient solutions to maximize resources. When additional facilities are added we will continue to work closely with architects and contractors to ensure the utilization of the latest practices and technology uses for maximum energy conservation. We are striving to identify additional projects that will provide adequate returns on investment within reasonable pay-back periods for existing facilities. We are actively pursuing a goal of 30% reduction in utility usage prior to 2017. Capital funding will be a key factor in the deployment further energy efficient measure adoptions.

Conclusion

The Arkansas State University System will continue to strive to meet its commitment toward energy conservation. The primary challenge that must be overcome is the lack of financial resources to invest in systematic energy improvements. Arkansas has no dedicated source of capital funding for higher education to address critical and deferred maintenance needs. Energy improvements often offer a return on investment with savings realized from reduced energy consumption. However, initial seed monies must be available to upgrade or retrofit facilities and equipment.

Act 1494, while providing a framework, did not take into account factors that could adversely affect energy consumption such as increased facility usage from enrollment growth and weather trend fluctuations. (e.g. A milder summer one year followed by an unseasonably warm summer would negatively affect the energy consumption index through no fault of the institution.) While the legislation is not perfect as an absolute rule, the act did provide guidelines to promote the conservation of energy and sustainable design. The System will continue its efforts to meet those guidelines.

Appendix A

Board of Trustee Policy

Conservation of Energy and Natural Resources

(Effective December 11, 2009)

ARKANSAS STATE UNIVERSITY
SYSTEM

ASU System Policy

Effective Date: December 11, 2009

Subject: Conservation of Energy and Natural Resources

1. Purpose

Arkansas State University System is committed to energy conservation through sustainable design, construction, and operation of campus buildings. The Arkansas legislature established goals for sustainable, energy-efficient public buildings in Act 1494 of 2009. Arkansas State University is exempt from the provisions of Act 1494 if it develops policies and procedures to meet the specific performance criteria and goals for a major facility or major renovation as defined in the Act. This policy is adopted to meet the exemption requirements of Act 1494.

2. Arkansas State University System Conservation of Energy and Natural Resources Policy

Arkansas State University System will meet the specific performance criteria and goals for a major facility or a major renovation set out in Act 1494 of 2009.

3. Definitions

Arkansas State University (ASU). Arkansas State University (ASU) means all the campuses within the Arkansas State University System, now and in the future.

Major Facility. Major facility means a construction project larger than twenty thousand (20,000) gross square feet of occupied or conditioned space. Major facility does not include a transmitter building or a pumping station.

Major Renovation. Major renovation means a building renovation project that costs more than fifty percent (50%) of its current replacement value, is larger than twenty thousand (20,000) gross square feet of occupied or conditioned space, and is funded in whole or in part by the state.

4. Process

A. The following minimum standards apply to a major facility:

I. A major facility shall be designed, constructed, and certified to at least ten percent (10%) reduction below the baseline energy consumption determined in accordance with the Performance Rating Method of Appendix G of the American Society of Heating, Refrigerating and Air-conditioning Engineers, Standard 90.1-2007, as it existed on January 1, 2009.

II. Any exception or special standard for a specific type of building or building facility that is found in the American Society of Heating, Refrigerating and Air-conditioning Engineers, Standard 90.1-2007 shall be allowed.

B. The following minimum standards apply to a major renovation:

I. A major renovation shall be certified to at least ten percent (10%) reduction below the baseline energy consumption determined in accordance with the performance rating method of Appendix G of the American Society of Heating, Refrigerating and Air-conditioning Engineers, Standard 90.1-2007, as it existed on January 1, 2009.

C. For new construction of either a major facility or major renovation, the following standards apply:

I. The indoor water system shall be designed and constructed to use at least twenty percent (20%) less potable water than the indoor water use baseline calculated for the building after satisfying the fixture performance requirement, if any, under the Arkansas Plumbing Code.

II. The outdoor potable water or harvested ground water consumption shall use water use efficient landscape materials and irrigation strategies, including water reuse and recycling, to reduce conventional consumption by at least fifty percent (50%) of the water that would have been consumed otherwise.

D. In the event ASU determines that the American Society of Heating, Refrigerating and Air-conditioning Engineers, Standard 90.1-2007 is not practicable for a major facility or major renovation, a practicable alternative standard for the design and construction for that major facility or major renovation shall be utilized.

E. To verify the performance of a building component or system and ensure that design requirements are met upon completion of construction, building or system commissioning practices that are tailored to the size and complexity of the building and its system components shall be employed.

F. To measure and verify a major facility's performance under this section's standards, the following will be performed:

I. A meter for electricity, natural gas, fuel oil, and water shall be installed in accordance with the guidelines issued by the United States Department of Energy under Section 103 of the Energy Policy Act of 2005.

II. The metered data from the first twelve (12) months of the building's operation shall be compared with the energy design target.

III. A report of the performance results on that comparison shall be made to the Arkansas State University Board of Trustees.

IV. If the report shows that the building's average energy or water consumption over the one year period after the date of beneficial occupancy is more than the baseline consumption determined in accordance with the performance rating method of Appendix G of the American Society of Heating, Refrigerating and Air-conditioning Engineers, Standard 90.1-2007, as it existed on January 1, 2009, the designer, the contractor, the contractor manager at risk, the commissioning agent, and the appropriate representative of Arkansas State University shall investigate, determine the cause for the failure to achieve the performance standards, and recommend corrections or modifications to meet the performance standards.

(Adopted by the Arkansas State University Board of Trustees on December 11, 2009, Resolution 09-93)

Appendix B

Act 1494 of 2009

State of Arkansas *As Engrossed: H3/18/09 H4/7/09*
87th General Assembly **A Bill**
Regular Session, 2009 HOUSE BILL 1663

By: Representative Webb
By: Senator Broadway

For An Act To Be Entitled

AN ACT TO PROMOTE THE CONSERVATION OF ENERGY AND NATURAL RESOURCES IN BUILDINGS OWNED BY PUBLIC AGENCIES AND INSTITUTIONS OF HIGHER EDUCATION; AND FOR OTHER PURPOSES.

Subtitle

TO PROMOTE THE CONSERVATION OF ENERGY AND NATURAL RESOURCES IN BUILDINGS OWNED BY PUBLIC AGENCIES AND INSTITUTIONS OF HIGHER EDUCATION.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF ARKANSAS:

SECTION 1. Arkansas Code Title 22, Chapter 2, is amended to add an additional subchapter to read as follows:

25-4-401. Legislative findings.

The General Assembly finds that:

(1)(A) Public buildings can be built and renovated using sustainable, energy-efficient methods that save money, reduce negative environmental impacts, improve employee and student performance, and make employees and students more productive.

(B) The main objectives of sustainable, energy-efficient designs are to:

(i) Avoid resource depletion of energy, water, and raw materials;

(ii) Prevent environmental degradation caused by facilities and infrastructure throughout their life cycle; and

(iii) Create buildings that are livable, comfortable, safe, and productive; and

(2) State-owned buildings and buildings owned by an institution of higher education can be improved by establishing specific performance criteria and goals for sustainable, energy-efficient public buildings that are based on recognized, consensual standards with a scientifically proven basis and a history of successful performance.

25-4-402. Definitions

As used in this subchapter:

(1) "Institution of higher education" means a state-supported university or college;

(2) "Life-cycle cost analysis" means an analytical technique that considers the costs of owning, using, and operating a facility over its economic life including without limitation:

(A) Initial costs;

(B) System repair and replacement costs;

(C) Maintenance costs;

(D) Operating costs, including energy costs; and

(E) Salvage value;

(3)(A) "Major facility" means a construction project larger than twenty thousand (20,000) gross square feet of occupied or conditioned space.

(B) "Major facility" does not include a transmitter building or a pumping station;

(4) "Major renovation" means a building renovation project that:

(A) Costs more than fifty percent (50%) of its current replacement value;

(B) Is larger than twenty thousand (20,000) gross square feet of occupied or conditioned space; and

(C) Is funded in whole or in part by the state;

(5) "Public agency" means a state agency, office, officer, board, department, or commission; and

(6) "Sustainable, energy efficient public building" means a public building that, by complying with this subchapter, has the most economical

energy and water efficiency for that type of building.

25-4-403. The Sustainable Energy-Efficient Buildings Program.

(a) The Sustainable Energy-Efficient Buildings Program is established to promote energy conservation in buildings owned by public agencies and buildings owned by institutions of higher education.

(b) Under the Sustainable Energy-Efficient Buildings Program:

(1) For public agencies, the Arkansas Energy Office of the Arkansas Economic Development Commission shall develop and:

(A) Issue policies and technical guidelines to establish procedures and methods for compliance with the criteria and the performance standards for a major facility or a major renovation under § 25-4-404; and

(B) Administer an energy management program and an operation and maintenance program designed to achieve compliance with the requirements of § 25-4-406 through the implementation of energy conservation measures.

(2) For the institutions of higher education, each institution of higher education:

(A) Shall develop and issue policies and technical guidelines to establish procedures and methods for compliance with the criteria and the performance standards for a major facility or a major renovation under § 25-4-404; and

(B) May administer an energy management program and an operation and maintenance program designed to achieve compliance with the requirements of § 25-4-406 through the implementation of energy conservation measures.

25-4-404. Standards for a major facility or a major renovation.

(a) The following minimum standards apply to a major facility:

(1) A major facility of a public agency or an institution of higher education shall be designed, constructed, and certified to at least ten percent (10%) reduction below the baseline energy consumption determined in accordance with the Performance Rating Method of Appendix G of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Standard 90.1-2007, as it existed on January 1, 2009.

(2) Subdivision (a)(1) of this section applies to a major

facility project that has not entered the schematic design phase before the effective date of this act.

(3) An exception or a special standard for a specific type of building or building facility that is found in the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Standard 90.1-2007, is included in the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Standard 90.1-2007, under subdivision (a)(1) of this subsection.

(b)(1) A major renovation of a public agency or an institution of higher education shall be certified to at least ten percent (10%) reduction below the baseline energy consumption determined in accordance with the Performance Rating Method of Appendix G of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Standard 90.1-2007, as it existed on January 1, 2009.

(2) Subdivision (b)(1) of this section applies to a major renovation that has not entered the schematic design phase before the effective date of this act.

(c) For new construction under either subsection (a) or (b) of this section:

(1) The indoor water system shall be designed and constructed to use at least twenty percent (20%) less potable water than the indoor water use baseline calculated for the building after satisfying the fixture performance requirement, if any, under the Arkansas Plumbing Code; and

(2) Outdoor potable water or harvested groundwater consumption shall use water use efficient landscape materials and irrigation strategies, including without limitation water reuse and recycling, to reduce conventional consumption by at least fifty percent (50%) of the water that would have been consumed otherwise;

(d) If the Arkansas Energy Office of the Arkansas Economic Development Commission or the institution of higher education determines the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Standard 90.1-2007 is not practicable for a major facility or major renovation, the Arkansas Energy Office or the institution of higher education shall determine a practicable alternative standard for the design and construction for that major facility or major renovation.

(e) To verify the performance of a building component or system and

ensure that design requirements are met upon completion of construction, building or system commissioning practices that are tailored to the size and complexity of the building and its system components shall be employed;

(f) To measure and verify a major facility's performance under this section's standards:

(1) A building level owner's meter for electricity, natural gas, fuel oil, and water shall be installed in accordance with the guidelines issued by the United States Department of Energy under Section 103 of the Energy Policy Act of 2005; and

(2)(A) The public or institution of higher education and the building designers shall:

(i) Compare metered data from the first twelve (12) months of the building's operation with the energy design target; and

(ii) Report the performance results of that comparison to the Arkansas Energy Office or to the governing board of the institution of higher education.

(B) If the report under subdivision (f)(2)(A)(i) of this section shows that the building's average energy or water consumption over the one-year period after the date of beneficial occupancy is more than the baseline consumption determined in accordance with the Performance Rating Method of Appendix G of the American Society of Heating, Refrigerating and Air Conditioning Engineers, Standard 90.1-2007, as it existed on January 1, 2009, the designer, the owner public agency or the owner institution of higher education, the contractor, the contract manager at risk, and the commissioning agent shall:

(i) Investigate;

(ii) Determine the cause for the failure to achieve this section's performance standards; and

(iii) Recommend corrections or modifications to meet this section's performance standards.

25-4-405. Purchase of a constructed or renovated building.

(a) A public agency shall not purchase a building that:

(1) Did not meet the design and construction standards that were applicable for a comparable building at the time of its construction; or

(2) Had a major renovation that did not meet the standard for

energy and water efficiency that was applicable for a comparable building at the time of the major renovation.

(b) This section does not apply to:

(1) The purchase of a building that has historic, architectural, or cultural significance;

(2) A building that is acquired by devise or gift; or

(3) A building that is purchased for demolition.

25-4-406. Program to manage energy usage of public agencies.

(a) The Arkansas Energy Office of the Arkansas Economic Development Commission shall:

(1) Develop an energy program to manage energy, water, and other utility uses for public agencies that will reduce total energy consumption per gross square foot for all existing state buildings by twenty percent (20%) by 2014 and thirty percent (30%) by 2017 based on energy consumption for the 2007 - 2008 fiscal year if the savings can be justified by a life-cycle cost analysis; and

(2) Update this program annually.

(b) To implement its plan, the Arkansas Energy Office shall:

(1) Develop and implement policies, procedures, and standards to ensure that a public agency's purchasing practices:

(A) Improve the efficiency of energy, water, and other utility uses; and

(B) Consider the cost of the product over its economic life;

(2)(A) Adopt and implement building energy design guidelines for public agencies that include without limitation:

(i) Energy-use goals and standards;

(ii) Economic assumptions for life-cycle cost analysis; and

(iii) Other criteria for building systems and technologies.

(B) The Arkansas Energy Office shall modify the design criteria for the construction or the renovation of the facilities of a public facility to require the conduct of a life-cycle cost analysis;

(3) Identify and recommend energy conservation maintenance and

operating procedures that:

(A) Are designed to reduce energy consumption within the public facility; and

(B) Require no significant expenditure of funds.

(4) Require the maximum interchangeability and compatibility of equipment components when energy management equipment is proposed for any facility of a public agency; and

(5)(A) Develop an energy audit and a procedure for conducting an energy audit, to the extent funds are available.

(B) Within five (5) years after the effective date of this act, the Arkansas Energy Office shall have completed an energy audit of every public agency.

(C) When conducting an energy audit under subsection (b)(5) of this section, the Arkansas Energy Office shall identify and recommend any public facility that is suitable for:

(i) Building commissioning to reduce energy consumption within the facility; or

(ii) Installing an energy savings measure under a guaranteed energy savings contract.

(c) The Arkansas Energy Office may adopt architectural and engineering standards to implement this section.

(d) A public agency shall:

(1) Develop and implement, to the extent funds are available, an energy management plan to manage its energy, water, and other utility uses that is consistent with the Arkansas Energy Office's energy management program developed under this section;

(2) Update its management plan annually, including without limitation strategies for supporting the energy consumption reduction requirements under subsection (a) of this section;

(3) Submit annually by April 1 to the Arkansas Energy Office a written report of the public agency's utility consumption and costs by fuel;

(4) Carry out the construction and renovation of a facility in a manner that:

(A) Furthers the goals under this section; and

(B) Ensures the use of life-cycle cost analyses and practices to conserve energy, water, and other utilities; and

(5) Implement the Arkansas Energy Office's recommendations made under subdivision (b)(1) of this section, to the extent funds are available.

25-4-407. Application to historic and unique buildings.

This subchapter does not apply if the implementation of a measure to conserve energy, water, or other utility use conflicts with the requirements for:

(1) A property to be eligible for, nominated to, or entered on the National Register of Historic Places under the National Historic Preservation Act of 1966, P.L. 89-665;

(2) An historic building located within an historic district;

(3) An historic building listed, owned, or under the jurisdiction of an historic properties commission; or

(4) A building that the Arkansas Energy Office has exempted from this subchapter because of its unique architectural characteristics or usage.

25-4-408. Advisory committee for the Arkansas Energy Office of the Arkansas Economic Development Commission.

(a)(1) The Director of the Arkansas Energy Office of the Arkansas Economic Development Commission shall create a sustainable, energy-efficient building advisory committee composed of:

(A) Representatives from the design and construction industry who are involved in public works contracting;

(B) Persons from public agencies who are responsible for overseeing public works projects or for developing energy efficiency programs and policies; and

(C) Other persons that the director considers to have useful information.

(2) Advisory committee members shall serve at the pleasure of the director.

(b) The committee shall provide advice on the implementation of this subchapter, including without limitation recommendations regarding:

(1) An education and training process for persons who are involved in the implementation of this subchapter;

(2) An ongoing evaluation or feedback process to help the authority to implement this section; and

(3) Water-deficiency requirements and energy-efficiency requirements.

25-4-409. Rules.

(a) The Arkansas Energy Office of the Arkansas Economic Development Commission shall:

(1) Adopt rules for the implementation of operation and maintenance energy conservation measures in a public building; and

(2) Develop or revise the Arkansas Energy Office's architectural and engineering standards to provide assistance in determining:

(A) Which energy conservation measures are best suited to the unique characteristics of each building; and

(B) The specifications for the energy conservation measures under this subchapter; and

(3) Adopt rules for the development of education and training requirements for the various personnel that may be involved in a major facility or a major renovation under this subchapter.

(b) The Arkansas Energy Office may adopt:

(1) Rules to implement this subchapter; and

(2) Architectural or engineering standards as needed to implement this section.

25-4-410. Performance review — Report.

(a) The Arkansas Energy Office of the Arkansas Economic Development Commission, to the extent funds are available, shall conduct a performance review of the Sustainable Energy-Efficient Buildings Program that includes at least the following:

(1) An identification of the costs of implementing energy-efficient and water-efficient building standards in the design and construction of a major facility or major renovation;

(2) An identification of the operating savings attributable to the implementation of energy-efficient and water-efficient building standards, including without limitation savings in energy, water, utility, and maintenance costs;

(3) An identification of any impact on employee productivity from the application of the standards under this subchapter; and

(4) An evaluation of the effectiveness of the application of the standards under this subchapter.

(b) No later than December 1, 2010, and each year thereafter, the Arkansas Energy Office and each institution of higher education shall report to the cochairs of the Legislative Council its:

(1) Findings under subsection (a) of this section; and

(2) Recommended changes, if any.

25-4-411. Applicability.

(a) The boards of trustees for the University of Arkansas, Arkansas State University, the University of Central Arkansas, Henderson State University, Arkansas Tech University, and Southern Arkansas University are exempt from the provisions of this subchapter if those institutions develop policies and procedures to meet the specific performance criteria and goals for a major facility or major renovation.

(b)(1) The board of trustees of any institution of higher education that is not included under subsection (a) of this section may be exempted from the provisions of this subchapter by the Department of Higher Education.

(2) Before granting an exemption to a board of trustees of an institution of higher education under subdivision (b)(1) of this section, the department shall review and approve the policies and procedures to meet the specific performance criteria and goals for a major facility or major renovation.

(c) This subchapter does not:

(1) Preclude an institution of higher education from adopting the policies and technical guidelines for a major facility or a major renovation that are established by the Arkansas Energy Office of the Arkansas Economic Development Commission under § 25-4-403(b)(1); or

(2) Affect the processes or exemptions under § 22-6-601.

/s/ Webb

APPROVED: 4/14/2009