Energy Use in South Carolina's Public Facilities, FY 2004

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EXECUTIVE SUMMARY

Energy Use in South Carolina's Public Facilities, Fiscal Year 2004 summarizes energy consumption and cost data for public school districts, state agencies and public institutions of higher learning in South Carolina. It is required by the South Carolina Energy Conservation and Efficiency Act of 1992.

In fiscal year 2004, South Carolina public facilities saved $6.2 million in energy costs compared to fiscal year 1998 as a result of greater energy efficiency. In proportion to the amount of space occupied in 2004, the colleges experienced greater cost savings than the state agencies. The school districts as a group showed no cost savings over the six-year period. This is probably due to such factors as greater use of computers and other electronics, more air conditioned space, and increased hours of operation.

Table 1. Energy Cost Savings for FY2004 Compared to FY1998 Baseline

Category	Energy Cost Savings (In millions)	Cost Savings per Square Foot
School Districts	-$2.53	-$0.02
State Agencies	$2.42	$0.12
Colleges with Housing	$4.91	$0.18
Colleges without Housing	$1.42	$0.20
Total	**$6.21**	

Public entities submitting energy data reports spent $199 million on energy in 2004 (Table 2). Overall, public facilities spent 82.1 percent of their energy dollars on electricity and 16.2 percent on natural gas.

Table 2. FY2004 Energy Expenditures (in millions of dollars) by Fuel Source

Fuel Source	School Districts	State Agencies	Colleges With Housing	Colleges without Housing	Totals
Electricity	$93.319	$27.470	$34.403	$8.131	$163.323
Natural Gas	$10.158	$9.070	$11.402	$1.572	$32.202
Fuel Oil	$0.192	$0.262	$0.079	$0.086	$0.618
Propane	$0.570	$1.253	$0.027	$0.000	$1.851
Coal	$0.000	$0.000	$1.008	$0.000	$1.008
Kerosene	$0.000	$0.002	$0.000	$0.000	$0.002
Total Expenditures	**$104.238**	**$38.056**	**$46.919**	**$9.790**	**$199.003**

Totals for individual fuels do not necessarily sum to totals due to independent rounding.

Table 3 shows that colleges and universities with housing benefited from the lowest unit costs for electricity, and state agencies had the lowest unit costs for natural gas. School districts paid the highest average unit energy prices for electricity, and the colleges without housing paid the highest unit costs for natural gas.

Table 3. Average Unit Energy Costs in FY2004

Cost- per- Unit	School Districts	State Agencies	Colleges with Housing	Colleges without Housing	Overall Average
Electricity ($/kBtu)	$0.023	$0.018	$0.016	$0.020	$0.020
Electricity ($/kwh)	$0.080	$0.062	$0.054	$0.067	$0.069
Natural Gas ($/kBtu)	$0.011	$0.006	$0.008	$0.012	$0.008
Natural Gas ($/therm)	$1.103	$0.627	$0.773	$1.206	$0.811
Fuel Oil ($/kBtu)	$0.008	$0.007	$0.006	$0.018	$0.008
Fuel Oil ($/gallon)	$1.161	$1.012	$0.871	$2.541	$1.128
Propane ($/kBtu)	$0.012	$0.009	$0.012	N/A	$0.010
Propane ($/gallon)	$1.096	$0.860	$1.057	N/A	$0.924
Average for All Energy Sources ($/kBtu)	**$0.021**	**$0.012**	**$0.012**	**$0.018**	**$0.016**

Two performance indicators are used to compare energy consumption among organizations and to describe historical trends. The annual energy cost per square foot ($/sq.ft.) and the annual energy use per square foot (kBtu/sq.ft.) are measures of cost and consumption for all energy sources combined. Both indicators are calculated using adjusted figures that exclude data for unheated buildings, outdoor lighting and other equipment with no associated square footage, and buildings outside the normal range of energy use. They are reported along with total square footage and total energy costs in Table 4.

Table 4. FY2004 Summary Data

Institutions	Total Sq.Ft. (in millions)*	Total Energy Cost (in millions)*	Average Cost per Sq.Ft.**	Average kBtu per Sq.Ft.**
School Districts (85)	107.4	$104.2	$0.96	46.20
State Agencies (29)	24.3	$38.1	$1.58	118.11
Colleges with Housing (13)	29.8	$46.9	$1.39	123.92
Colleges without Housing (20)	7.7	$9.8	$1.25	71.52
Totals	169.1	$199.0	$1.12	69.67

Figures do not necessarily sum to totals due to independent rounding.
*Includes the total space, total cost and total usage reported,
**These numbers represent the adjusted cost per square foot and use (kBtu) per square foot.

The 85 school districts included in this report spent $104.2 million to provide energy for 107 million square feet of building space (Table 4). The average cost per square foot for conditioned space was $0.96. The median cost per square foot for South Carolina districts was $0.92, as compared to $1.09 per square foot reported by a nationwide survey of school districts.

Because a number of state agencies have utility costs included in their rent payments to private sector landlords, the total energy costs for state government are not reported. Average cost for conditioned building space owned by agencies was $1.58 per square foot. Eight state agencies each paid over $1 million in energy bills in 2004. The largest of these, the Department of Corrections, had energy expenditures of $12.4 million for 6.3 million square feet.

Colleges with housing spent $46.9 million to provide energy for 30 million square feet of building space, averaging $1.39 per square foot of conditioned space. The median cost per square foot for these institutions was $1.29, somewhat higher than the national median of $1.18 for four-year colleges. The colleges with housing vary widely in size. The three research universities, Clemson University, the Medical University of South Carolina and the University of South Carolina (Columbia campus), comprise nearly two-thirds of the total square footage and over two-thirds of the total energy expenditures for this category.

Twenty public colleges without housing, a group composed of technical colleges and two-year branch campuses of the University of South Carolina, spent $9.8 million on energy. The average cost per square foot of conditioned space was $1.25, and the median was $1.28, as compared with the national median of $1.32 per square foot for two-year colleges.

Average energy use per square foot varied from 46.20 kBtu for school districts to 123.92 kBtu for colleges with housing. Table 5 provides a seven-year historical comparison of energy use (kBtu) per square foot for the four categories in this study.

Table 5. Energy Use (kBtu) per Square Foot Comparison, FY1998-FY2004

Fiscal Year	School Districts	State Agencies	Colleges with Housing	Colleges without Housing
1997-98	45.02	127.44	140.06	82.74
1998-99	45.07	119.14	138.46	71.30
1999-00	45.30	117.19	134.56	75.83
2000-01	48.13	121.66	127.15	79.03
2001-02	45.07	109.94	124.85	74.20
2002-03	46.02	110.46	118.84	75.19
2003-04	46.20	118.11	123.92	71.52

These numbers represent the adjusted energy use (kBtu) per square foot.

This report is an aggregate summary of information provided by 152 responding entities. Each public institution that participates in this study receives a customized written report that details its energy cost and use per square foot data and provides comparisons to the average for facilities in the same category. An important result of the energy consumption reporting process is that it provides necessary information for institutions to develop energy conservation plans and goals.

When high energy use patterns are identified, the Energy Office works with these institutions to address problems and provide technical assistance through our Rebuild South Carolina and ConserFund Loan programs. In fiscal year 2004, greater energy efficiency accounted for an estimated $6.2 million in savings for the entities included in this report.

Through the Rebuild South Carolina program, energy technicians perform energy audits of participating facilities to locate problems and propose solutions. If an institution needs assistance in financing energy saving projects, the Energy Office offers the ConserFund loan program and other options for funding of energy efficiency measures. Institutions are then able to repay the loans from the cost savings achieved as a result of these energy efficiency measures.

In 2003, the Energy Office entered into a partnership with SchoolDude.com to provide a web-based energy accounting system to the State of South Carolina. This system, called UtilityDirect, enables public facility managers to monitor and analyze their utility expenditures in order to identify problems and savings opportunities. The Energy Office can access the utility data online to facilitate preparation of the required annual energy consumption reports.

This report summarizes the energy consumption and cost data submitted to the Energy Office for fiscal year 2004. This data helps convey to the public, agency leaders, school administrators and public facility managers the manner in which public facilities are consuming energy, and can serve as a tool which will help them improve their performance. Using standard measures of energy consumption, it is possible to render an analysis of a given agency's performance in comparison with other agencies as well as to establish a historical trend of energy use. Presentation of these measures in an accurate and systematic manner is the primary purpose of this report.

INTRODUCTION

Purposes

The information contained in this report represents the South Carolina Energy Office's thirteenth compilation of energy cost and energy consumption data submitted by South Carolina's public school districts, state agencies, public universities and public colleges. This report summarizes fiscal year 2004 data for 85 public school districts, 28 state agencies and 33 universities and public colleges. For the purposes of this study, the total energy use and cost figures were based solely on buildings and other fixed facilities on the grounds of the reporting entities. Transportation energy use and costs were not included.

This report is required by Section 48-52-620 (E) of the South Carolina Energy Conservation and Efficiency Act of 1992 (see Appendix A). It provides aggregate energy use numbers so the Energy Office can determine state public sector baselines and goals and measure results over time. The data highlights success stories that can be used as models, and also identifies institutions and buildings that are likely candidates for help in reducing energy costs. A very significant benefit of the reporting process is that it provides necessary information for individual institutions to use in reducing energy costs. By utilizing this data, institutions can develop energy conservation plans and goals. Most importantly, the reporting process provides accurate information to the general public and to public officials about energy use involving taxpayer dollars.

The specific objectives of energy use reporting are:

- To encourage meaningful, consistent, and methodical collection of energy data on a periodic basis;
- To define a collective baseline of energy conservation data for facilities;
- To encourage the establishment of effective, practical energy conservation goals and plans; and
- To assist in establishing optimal standards for energy efficiency and building performance.

Review of Responses

Information was received from 84 of South Carolina's 85 public school districts. For the non-reporting school district, Clarendon 3, historical information was used to estimate 2004 consumption included with aggregate data. The Energy Office also estimated consumption for some individual buildings when school districts submitted incomplete data.

Energy consumption reports were received from 37 units of state government representing 29 different agencies (Divisions within some agencies file separate reports). Historical projections were used for one non-reporting state agency, the Old Exchange Building Commission, and for the Department of Natural Resources, which submitted incomplete data.

Many state agencies lease facilities and are unable to provide separate energy consumption data. Energy data for some of these leased facilities is reported by the State Budget and Control Board, Division of General Services, which operates many state buildings both in Columbia and throughout the state. Energy data for facilities leased from entities other than the Division of General Services are not included in this report.

Public colleges are divided into two groups depending upon whether or not they offer housing. There are 13 colleges with housing (twelve four-year colleges and one technical college) and 20 colleges without housing (fifteen technical colleges and five branches of the University of South Carolina). Historical data was used to estimate energy cost and consumption figures for South Carolina State University and Williamsburg Technical College, which did not submit their energy data reports.

Appendix B provides complete lists of responding and non-responding entities.

OVERALL FINDINGS

Performance Indicators

Two performance measures are used in this report: energy cost per square foot and energy use per square foot.

The first indicator, annual energy cost per square foot, is widely used for comparison. The advantage of this measure is that energy costs can be readily identified and compared. However, this indicator accounts for differences due to energy prices as well as energy use.

The second performance indicator is annual energy use per square foot. By converting energy use to a standard measurement of British thermal units (Btu), a building owner may compare the energy efficiency of buildings using different energy sources. (A Btu is equal to the quantity of heat required to raise the temperature of one pound of water by one degree Fahrenheit.) This method also provides a comparative measure of performance that allows valid comparisons of energy use from year to year regardless of variations in energy prices.

Both performance indicators are calculated using adjusted figures that exclude data for buildings with consumption patterns that would distort the overall averages. The adjusted data exclude figures reported for: unheated space, outdoor lighting and other equipment with no associated square footage, and buildings with unusually high energy requirements[1]. Throughout this report, table footnotes specify when total or adjusted data have been used.

There is great variation among reporting entities. Some of the reasons for this variation include the following:

Age of buildings

Older buildings were often built with less concern for energy efficiency. Deterioration over the years and limited technology compound this effect.

Energy conservation measures

Many entities have implemented energy conservation plans. The measures undertaken range from low-cost and no-cost methods of energy use reduction to extensive energy conservation retrofits.

[1] Buildings for which the cost per square foot was less than $0.20 or the energy use was less than 20 kBtu were assumed to be unconditioned space. Buildings had unusually high energy requirements if the cost per square foot exceeded $3.00 or the energy use per square foot exceeded 300 kBtu.

Energy efficient design

Great strides have been made in recent decades to incorporate energy efficiency into building design. Many South Carolina public facilities reflect these advances.

Hours of operation

Some buildings are lightly used, while some are in use 24 hours a day. Some facilities, such as schools, are in use only nine or ten months of the year.

Building uses

Although many state-owned buildings are primarily office buildings, the functions of state facilities vary greatly. Libraries, cafeterias, warehouses, laboratories, meeting facilities, prisons, maintenance garages and security buildings, for example, have widely varying energy needs.

Metering issues

Sometimes outside lights are metered to buildings. If the building is small and the outdoor lighting is extensive (e.g., parking areas), this can skew the per square foot figures for cost and use. In addition, there are cases where multiple buildings are served by one meter. This, too, can alter the square foot figures for cost and use.

High technology

Facilities housing large amounts of electronic equipment (including computers) will show high cost and usage results.

Fuel types

Different fuel sources entail different levels of expense. It may cost more to heat with electricity than with natural gas, for example, but natural gas use will yield higher Btu per square foot numbers.

Fuel prices

Fuel prices can vary by region, utility, and size of purchaser.

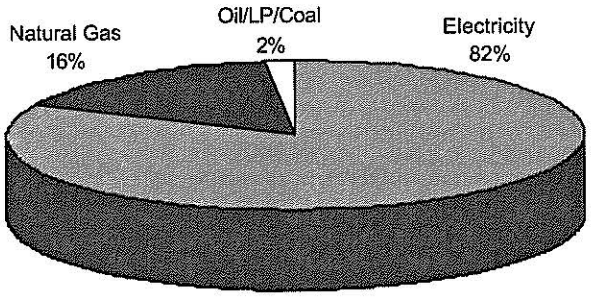
Climate

In the upper part of the state, air conditioning is needed considerably less than in the rest of the state. Conversely, this region is likely to need more winter heating.

Cost Overview

Electricity costs comprise 82.1 percent of the total public sector energy costs and natural gas accounts for 16.2 percent of the total cost for fiscal year 2004. Figure 1 shows the energy expenditure breakdown by fuel source for South Carolina's public entities.

Figure 1. Energy Expenditures, FY2004



*LP indicates liquid propane fuel.

As noted previously, reporting entities are divided into four categories: public school districts, state agencies, colleges with housing, and colleges without housing. These are described separately in subsequent sections. Table 1 presents a historical comparison of the total expenditures for each of these categories.

Table 1. Comparison of Total Energy Expenditures, FY1998-FY2004 (In millions)

Fiscal Year	School Districts	State Agencies	Colleges with Housing	Colleges without Housing	Totals
1997-98	$73.7	$31.3	$33.2	$7.1	$145.3
1998-99	$75.2	$32.5	$33.9	$7.2	$148.8
1999-00	$80.1	$32.7	$37.2	$7.8	$157.8
2000-01	$90.4	$36.8	$39.1	$8.6	$174.8
2001-02	$88.8	$33.1	$37.6	$8.6	$168.0
2002-03	$96.1	$36.3	$44.0	$8.9	$185.5
2003-04	$104.2	$38.1	$46.9	$9.8	$199.0

Figure 2. School Districts, Energy Use per Square Foot, FY2004 (above median)

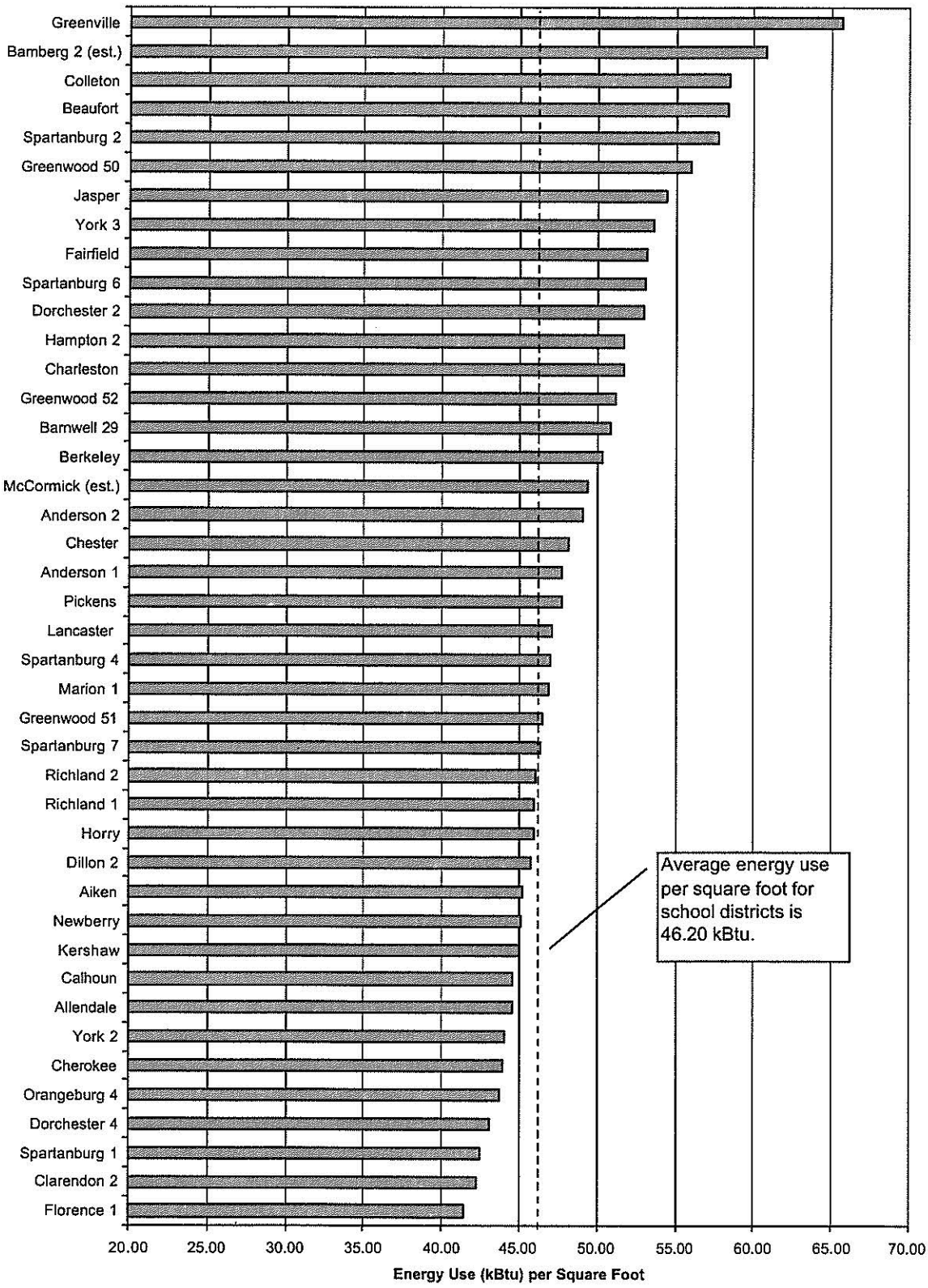
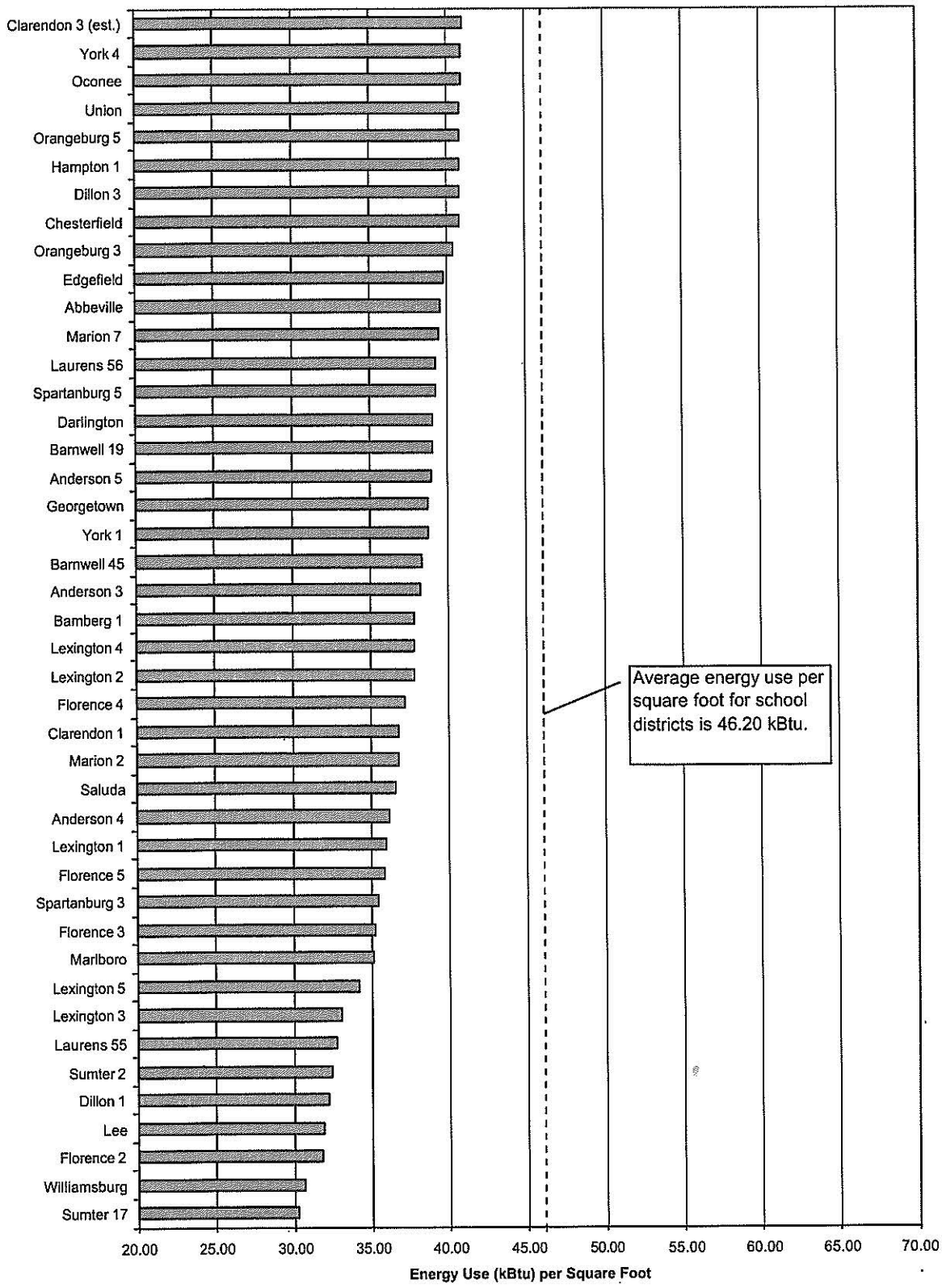


Figure 2. School Districts, Energy Use per Square Foot, FY2004 (at or below median)



The nine school districts with the lowest energy use per square foot averages for 2004 are included in Table 5.

Table 5. School Districts, Lowest Energy Use per Square Foot, FY2004

School District	Square Feet	KBtu/sf
Sumter 17	1,469,591	30.20
Williamsburg	805,267	30.68
Florence 2	230,441	31.75
Lee	474,469	31.88
Dillon 1	143,802	32.24
Sumter 2	1,454,684	32.37
Laurens 55	1,072,644	32.71
Lexington 3	471,194	33.05
Lexington 5	2,655,520	34.22

Cost per Square Foot

Electricity expenditures increased by 8.5 percent from 2003, and natural gas expenditures increased by 7.2 percent. Total energy expenditures in school districts rose by 8.4 percent from the prior year.

The average cost per square foot is $0.96 (up 3 cents from 2003), but still lower than the national median of $1.09 per square foot.[3]

Figure 3. ranks the 85 school districts from highest to lowest cost per square foot using adjusted data.

[3] *American School & University.* "Challenging Times: 34th Annual M&O Cost Study," April 2005, www.asumag.com.

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SCHOOL ENERGY EFFICIENCY INITIATIVE

In February 2000, the South Carolina Energy Office introduced a grant program to assist the school districts ranked in the lowest third of all South Carolina districts on measures of financial resources. Eligible school districts could apply for funds for energy efficient lighting retrofits for school buildings. The program was later expanded to include other types of energy efficiency improvements such as replacement of inefficient heating and air conditioning equipment and installation of energy management systems.

Twenty-five school districts received grant awards of up to $150,000. The Energy Office spent a total of $2.8 million on the projects, and the districts cost-shared over $1 million for the balance of project costs. All available grant funds have been spent. Now that all projects are complete, the Energy Office has estimated energy cost savings will total $6.2 million over the expected lives of the measures implemented.

The purposes of the grant program were to reduce operating costs through increased energy efficiency and to improve the learning environment through better lighting and more comfortable heating and cooling. The following project descriptions illustrate the results of the School Energy Efficiency Initiative.

Dillon School District Two: The district installed drop ceilings and new lighting fixtures in the East Elementary School. The old ceilings in the 1926 building had deteriorated and actually fallen in one classroom. Commenting on the completed project, Superintendent Ray Rogers noted, "The lighting has helped change the learning environment in the school."

Florence County School District Three: Grant funds were used to replace old, inefficient HVAC equipment at Lake City High School Vocational Training Center. The district also installed new lighting fixtures at Scranton Elementary, Olanta Elementary and Graham Road Alternative Schools, and new ceilings and light fixtures at Ronald E. McNair Middle School. Estimated annual energy cost savings were $10,500. In summarizing the project, Jay Alexander, Director of Facilities, wrote, "Without the grant funding, the projects would have not been initiated. As a result of the projects, the facilities have been brought up to current standards. The learning environment for children has been greatly improved."

Hampton County School District 2: The district improved the Gifford-Luray School by installing new ceilings with insulation and changing the lighting fixtures to electronic ballasts with T-8 tubes. Lighting was also upgraded with electronic ballasts and T-8 tubes at Estill Middle School. Estimated annual energy cost savings for the two projects were $7,260.

Figure 3. School Districts, Average Energy Cost per Square Foot, FY2004 (above median)

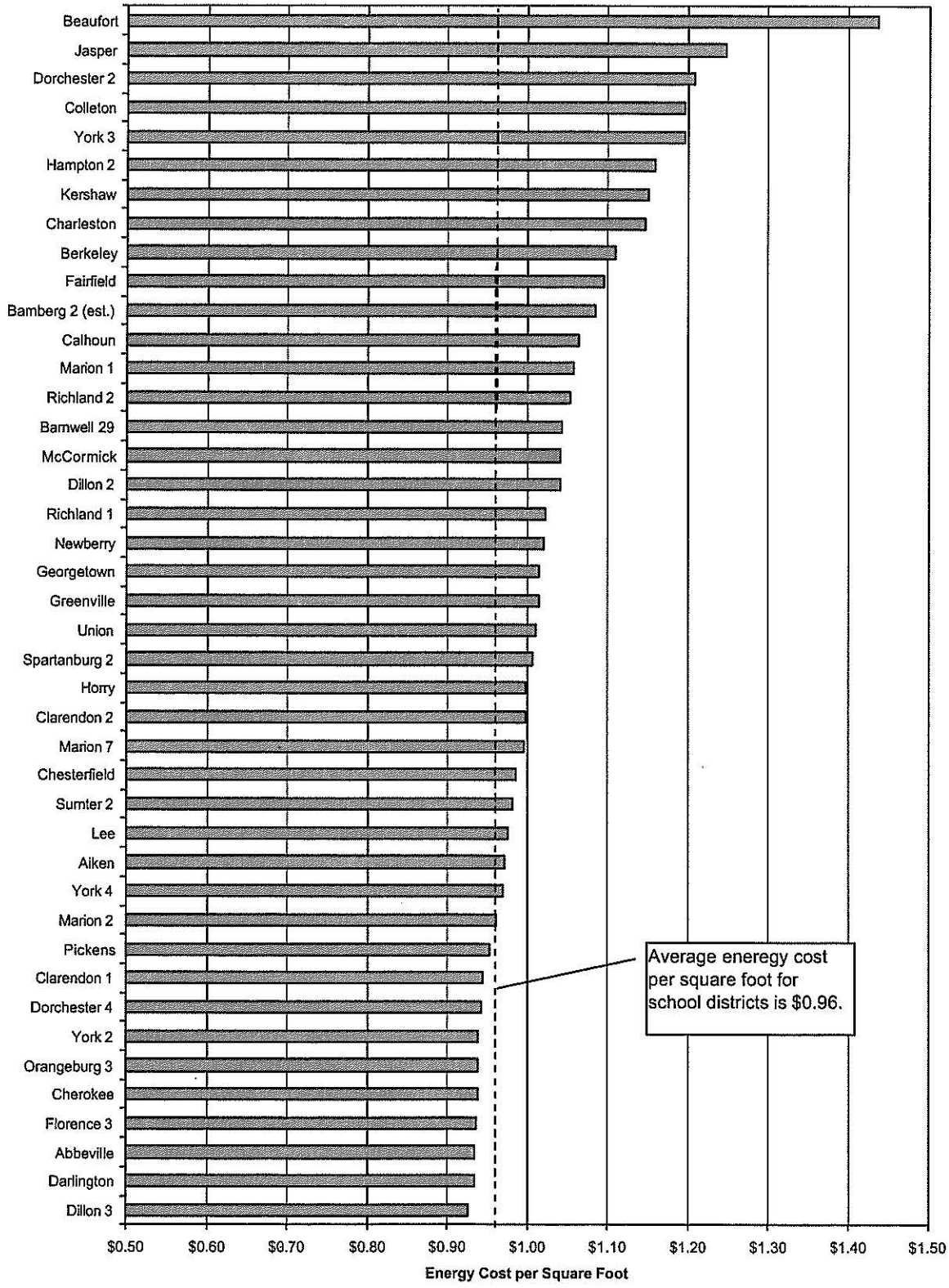
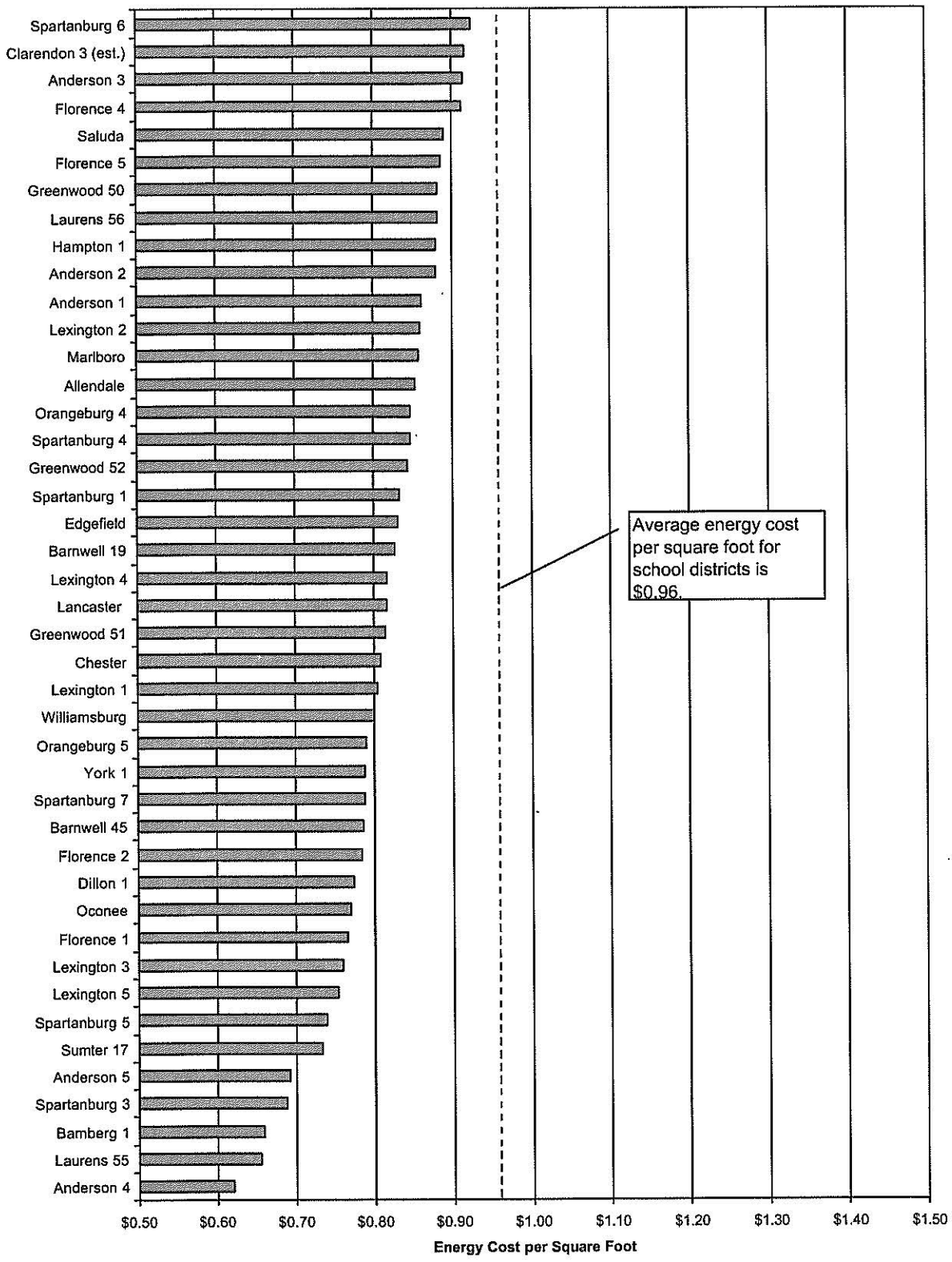


Figure 3. School Districts, Average Energy Cost per Square Foot, FY2004 (at or below median)



The nine school districts with the lowest reported cost per square foot averages for fiscal year 2004 are featured in Table 6.

Table 6. School Districts, Lowest Energy Cost per Square Foot, FY2004

School District	Square Feet	$/sf
Anderson 4	549,979	$0.62
Laurens 55	1,072,644	$0.66
Bamberg 1	269,286	$0.66
Spartanburg 3	528,305	$0.69
Anderson 5	2,028,053	$0.69
Sumter 17	1,469,591	$0.73
Spartanburg 5	873,516	$0.74
Lexington 5	2,655,520	$0.75
Lexington 3	471,194	$0.76

STATE AGENCIES

Historical Trend

The total amount of square footage reported by South Carolina state agencies is slightly higher than in 1998 (Table 7). During this same time period, the total energy cost for state agencies increased by 20 percent and the total kBtu's consumed increased by 7 percent. Since 1998 there has been a 22 cent increase in the energy cost per square foot for conditioned space, while the kBtu per square foot has decreased by 9 percent. State agencies realized an overall improvement in energy efficiency in 2004 as compared with 1998 and saved an estimated $2.4 million in energy costs over what would have been the case had no improvements in energy efficiency been made. (See Appendix D).

Table 7. Energy Statistics for State Agencies, FY1998-FY2004

Fiscal Year	Square Feet (in millions)*	Total Energy Cost (in millions)*	Cost per Square Foot**	Total kBtu (in millions)*	kBtu per Square Foot**
1997-98	24.2	$31.3	$1.36	2,886.7	127.44
1998-99	24.6	$32.5	$1.38	2,844.2	119.14
1999-00	24.3	$32.7	$1.41	2,739.4	117.19
2000-01	24.4	$36.8	$1.61	2,787.9	121.66
2001-02	24.7	$33.1	$1.39	2,541.7	109.94
2002-03	25.9	$36.3	$1.49	3,072.0	109.89
2003-04	24.3	$38.1	$1.58	3,124.9	118.11

*Includes the total space, total cost and total usage reported.
**These numbers represent the adjusted cost per square foot and use (kBtu) per square foot.

Fiscal Year 2004 Findings

In 2004, state agencies experienced a 5 percent increase in energy costs from the prior year. Expenditures for electricity increased by 3 percent and for natural gas by 11 percent. Overall, the state agencies spent 72.2 percent of their utility dollars on electricity, 23.8 percent on natural gas, and 3.3 percent on propane.

Due to the diverse nature and use of state agency facilities, comparison of their energy usage and expenditure patterns is difficult. They vary in size from those that operate just one or two buildings to the Department of Corrections which operates facilities totaling over 6 million square feet. Furthermore, several agencies own 24-hour residential facilities and laboratories which are high energy users compared to office buildings. Other agencies have facilities that are occupied only a few hours a week or that operate without heating or air conditioning. For these reasons, the energy use and cost performance indicators

are based on "normal use" facilities that account for 80 percent of the total square footage reported by state agencies.

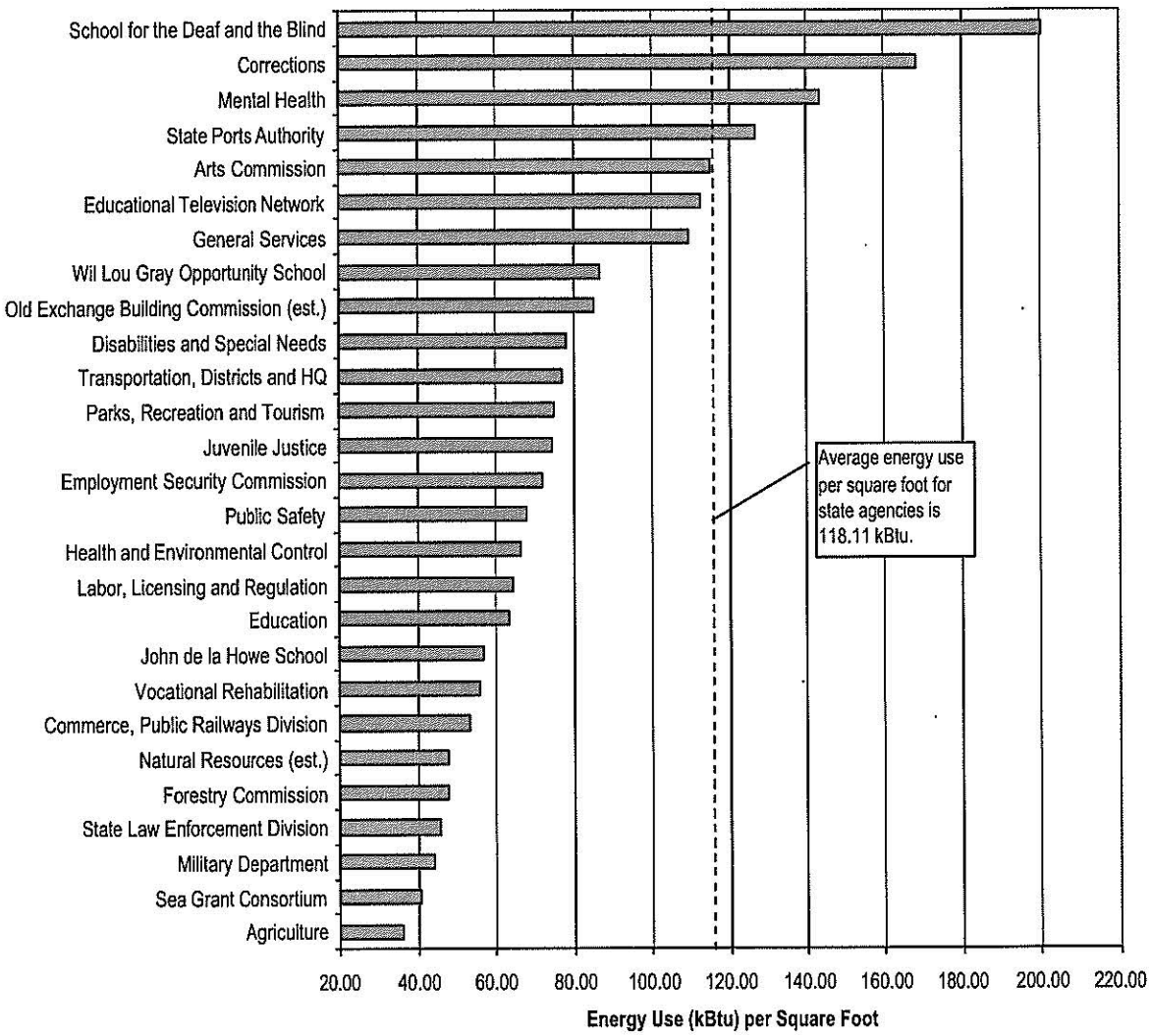
An additional consideration is that many buildings are reported not by the individual agencies using them, but by the State Budget and Control Board's Division of General Services, which manages them. The Division of General Services submitted reports for 168 facilities occupied by 26 different agencies and totaling 3.9 million square feet.

Energy Use per Square Foot, Fiscal Year 2004

Annual energy use for state agencies ranges from 35.82 to 200.18 kBtu per square foot for "normal use" facilities, with the median energy use for state agencies being 72.26 kBtu per square foot. The overall average for "normal use" facilities was 118.11 kBtu per square foot. The three agencies that use the most energy (Department of Corrections, Office of General Services and Department of Mental Health) have averages ranging from 109.74 to 168.57 kBtu per square foot, which tend to skew the overall average upwards.

The state agencies are ranked in Figure 4. from highest to lowest energy use per square foot using adjusted data. This chart includes 27 agencies; the data from the Department of Commerce, Aeronautics Division, the Patriots Point Development Authority, and the State Fleet Management section of General Services were excluded by the adjustment process. The Public Service Authority (Santee Cooper) was excluded from the ranking since it is a power provider.

Figure 4. State Agencies, Energy Use per Square Foot, FY2004



The five state agencies with the lowest average energy use per square foot for 2004 are listed in Table 8.

Table 8. State Agencies, Lowest Energy Use per Square Foot, FY2004

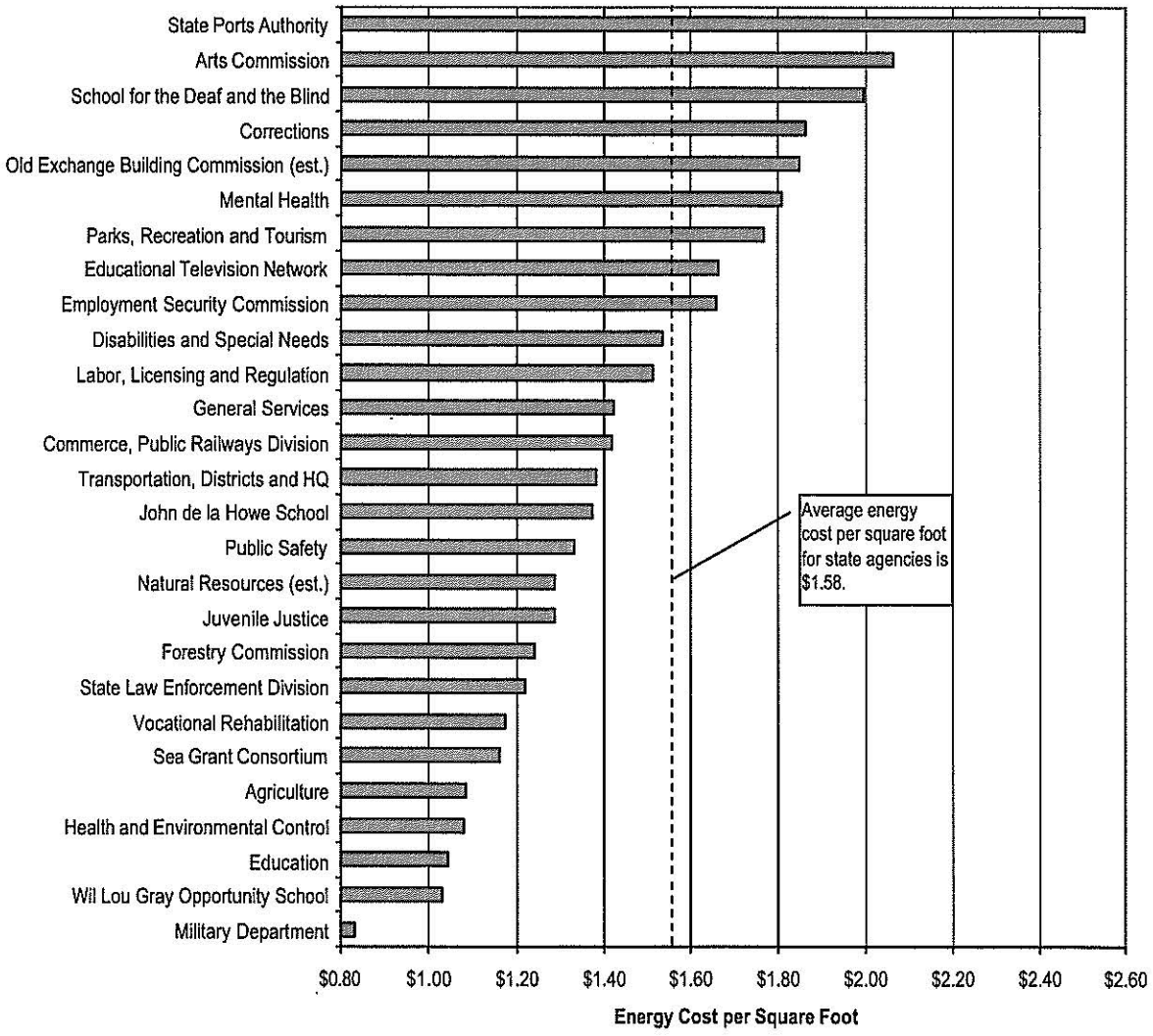
State Agency	Square Feet	kBtu/sf
Agriculture	5,000	35.82
Sea Grant Consortium	5,280	40.83
Military Department	1,219,896	43.96
State Law Enforcement Division	9,020	45.79
Forestry Commission	73,468	47.52

Cost per Square Foot, Fiscal Year 2004

For South Carolina state agencies, the average annual energy cost ranged from $.83 to $2.50 per square foot. The median cost was $1.38. The overall average for "normal use" facilities was $1.58 per square foot.

The state agencies are ranked by cost per square foot using adjusted data in Figure 5. This chart includes 27 agencies; the data from the Department of Commerce, Aeronautics Division, the Patriots Point Development Authority, and the State Fleet Management section of General Services were excluded by the adjustment process. The Public Service Authority (Santee Cooper) was excluded from the ranking since it is a power provider.

Figure 5. State Agencies, Energy Cost per Square Foot, FY2004



The five South Carolina state agencies with the lowest average energy cost per square foot for fiscal year 2004 are shown in Table 9.

Table 9. State Agencies, Lowest Energy Cost per Square Foot, FY2004

Agency	Square Feet	$/sf
Military Department	1,219,896	$0.83
Wil Lou Gray Opportunity School	176,964	$1.03
Education	218,081	$1.04
Health and Environmental Control	52,722	$1.08
Agriculture	5,000	$1.08

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STATE AGENCY IN THE SPOTLIGHT: GENERAL SERVICES DIVISION

The State Budget and Control Board's General Services Division manages nearly 4 million square feet of space occupied by 30 state agencies. Most of the space is in buildings owned by the State Budget and Control Board in the Columbia area. However, General Services also maintains facilities for various agencies throughout the state. These include over 100 Department of Motor Vehicle and Highway Patrol offices.

The Facilities Management section of General Services reported spending $4.88 per square foot in fiscal year 2004 for state building maintenance, custodial services, utilities and administration. This cost is about 75 percent of the average cost for all government buildings in the United States.

A key factor in achieving these relatively low costs is the control of energy costs. The Facilities Management teams implement standard energy efficiency measures in the buildings they operate: replacement of inefficient lighting with T-8 fluorescents, review of age and condition of mechanical systems to determine need for repair or replacement, and establishment of a maintenance schedule. The central Energy Team monitors energy consumption monthly using energy accounting systems, FASER and UtilityDirect, and notifies the building teams when energy use is unusual.

General Services has also implemented several major energy projects in the past two years. Chillers were replaced at the Central Energy Facility, which serves the Capitol Complex and at the Hayne Laboratory and Sims-Aycock Buildings, occupied by the Department of Health & Environmental Control. The Hayne Laboratory also received a new boiler. Replacement of aging, inefficient equipment at these facilities reduced consumption by 10 – 12 percent and energy costs by $100,800 in fiscal year 2005.

Some projects have been undertaken primarily to improve building operations rather than to save energy. The Brown Building's lighting system was originally configured to be controlled by one switch on each floor. One person working after hours required lighting an entire floor. The installation of separate switches in 2003 has saved $1,500 annually. In the summer of 2004, General Services replaced the Rutledge Building heating and air conditioning units which had been inadequate to maintain cool temperatures for both occupants and computer equipment. Energy savings were $3,000 annually.

The Facilities Management section, directed by Dan Marlow, has building teams responsible for maintaining Columbia area facilities and one statewide team serving facilities located outside Columbia. The Environmental/Energy Services Team, led by Aaron Redmond, is responsible for planning and implementing energy projects, and Mark Veitch manages the energy accounting system.

COLLEGES WITH HOUSING

Historical Trend

The total square footage of colleges with housing in South Carolina increased by 9 percent during the period fiscal year 1998 to 2004 (Table 10). Total energy costs during this period rose by 41 percent, and the total consumption (kBtu) increased by 21 percent. The average cost per square foot during this period increased by 14 cents from $1.25 to $1.39, while the average kBtu per square foot fell from 140.06 to 123.92. Through energy efficiency, these colleges and universities saved an estimated $4.9 million in 2004 as compared with 1998 (See Appendix D).

Table 10. Energy Use Statistics for Colleges with Housing, FY1998-FY2004

Fiscal Year	Square Feet (in millions)*	Total Energy Cost (in millions)*	Cost per Square Foot**	Total kBtu (in millions)*	KBtu per Square Foot**
1997-98	27.2	$33.2	$1.25	3,326.4	140.06
1998-99	27.6	$33.9	$1.23	3,792.7	138.46
1999-00	28.2	$37.2	$1.16	4,053.8	134.56
2000-01	28.0	$36.0	$1.23	3,901.7	127.15
2001-02	28.2	$37.6	$1.21	3,792.1	124.85
2002-03	29.6	$44.0	$1.29	3,928.2	118.84
2003-04	29.8	$46.9	$1.39	4,034.2	123.92

*Includes the total space, total cost and total usage reported.
**These numbers represent the adjusted cost per square foot and use (kBtu) per square foot.

Fiscal Year 2004 Findings

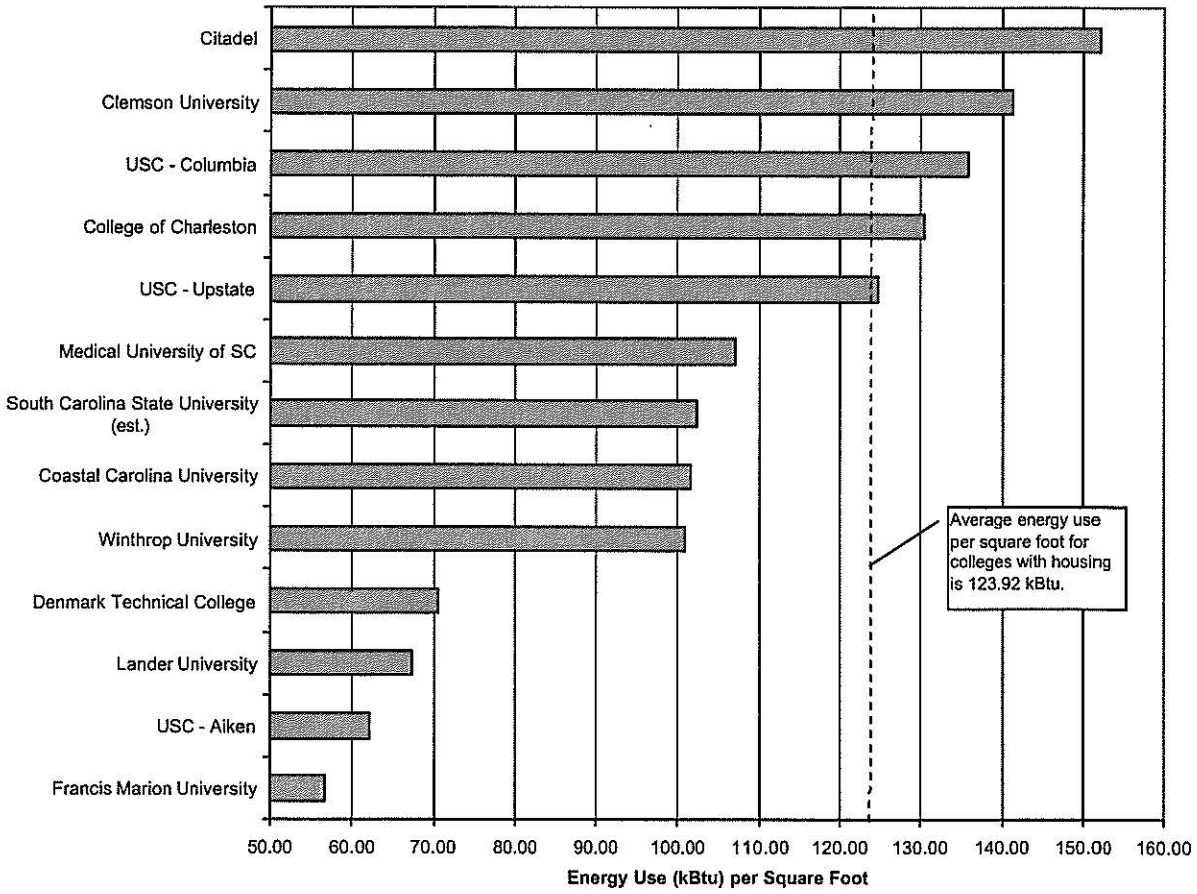
Colleges with housing, like state agencies, vary widely in size. Three of the 13 institutions, Clemson University, the Medical University of South Carolina and the University of South Carolina (Columbia campus), comprise 64 percent of the total square footage and 67 percent of the total energy expenditures for this category. As a result, the average cost per square foot and the average use per square foot figures largely reflect the energy costs and use for these three institutions.

Energy Use (kBtu) per Square Foot, Fiscal Year 2004

The colleges with housing category includes 12 four-year colleges and one technical college with on-campus housing. Average energy use for colleges with housing is 123.92 kBtu per square foot (up slightly from FY 03, but still lower than in previous years). Figure 6 provides a comparative ranking of energy use per

square foot for colleges with housing. The smaller institutions generally had the lowest average energy use per square foot. The seven largest institutions (The Citadel, South Carolina State University, College of Charleston, Winthrop, MUSC, Clemson, and USC – Columbia) ranged from 100.87 to 151.96 kBtu per square foot. Since this measure of energy use is based on facilities with normal energy use, MUSC's hospital and laboratory buildings were excluded. The average energy use for all MUSC facilities calculates at 224.21 kBtu per square foot.

Figure 6. Colleges with Housing, Energy Use per Square Foot, FY2004



The five colleges with housing that experienced the lowest energy use (kBtu) per square foot are featured in Table 11.

Table 11. Colleges with Housing, Lowest Energy Use per Square Foot, FY2004

College/University	Square Footage	kBtu/sf
Francis Marion University	632,650	56.61
USC - Aiken	731,125	62.23
Lander University	870,716	67.42
Denmark Technical College	204,243	70.48
Winthrop University	1,990,422	100.87

Energy Cost per Square Foot

Annual average costs per square foot for colleges with housing ranged from $.96 to $1.96 per square foot as indicated in Figure 7. The median energy cost per square foot was $1.29, somewhat higher than the median cost ($1.18) reported by a national survey of four-year colleges which excluded universities.[4] Average cost per square foot for all "normal use" facilities was $1.39 per square foot (up 10 cents from fiscal year 2003). When all MUSC facilities are included in the cost per square foot calculation, its average energy cost was $3.11 per square foot instead of $1.66. Although Clemson reported the highest energy use per square foot, its cost per square foot was very low (just $.98) due to its use of coal in its central energy facility.

[4] *American School & University.* "Steady Spending: 11th Annual College M&O Cost Study," April 2005, www.asumag.com.

Figure 7. Colleges with Housing, Energy Cost per Square Foot, FY2004

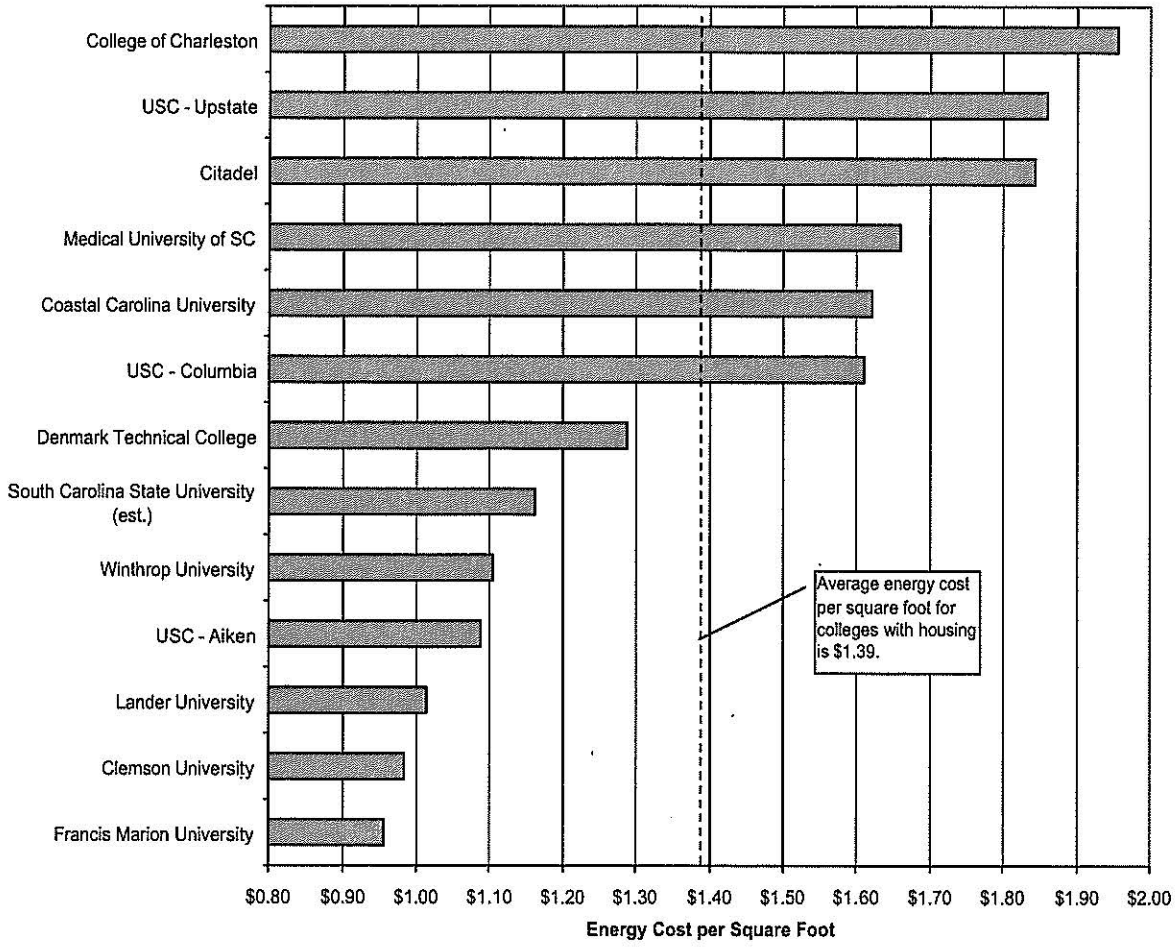


Table 12 highlights the five colleges with housing that have the lowest energy costs per square foot.

Table 12. Colleges with Housing, Lowest Energy Cost per Square Foot, FY2004

College/University	Square Footage	$/sf
Francis Marion University	632,650	$0.96
Clemson University	6,356,472	$0.98
Lander University	870,716	$1.01
USC – Aiken	731,125	$1.09
Winthrop University	1,990,422	$1.10

****

UNIVERSITY IN THE SPOTLIGHT: WINTHROP UNIVERSITY

Winthrop's Facilities Management staff faces the challenge of maintaining many old buildings on its 418-acre campus in Rock Hill. Over half of the 60 campus buildings were constructed prior to 1940. Walter Hardin, Associate Vice-President for Facilities Management, described how Winthrop is accomplishing building improvements and reducing utility costs.

"In 2004, Winthrop awarded a large energy performance project which bundled different energy efficiency measures (EEMs) to provide savings to do some much needed deferred maintenance. The main objective of the project was to provide sufficient funding to renovate our Dinkins Student Union building. This building renovation included a new energy efficient roof, energy efficient air handlers, variable air volume boxes and duct work, electronic lighting, acoustical ceilings, and new paint and carpet.

"Although this project did produce some efficiencies, the savings were far from sufficient to cover the costs. To help pay for this upgrade, we included a variety of other EEMs. The central Chilled Water Plant capacity was increased by replacing two 1968 271 Trane Centravacs with two 350-ton AFV energy efficient units. We also added a plate exchange free cooling system installed in conjunction with our existing 2500-ton Marley Stainless Steel twin cell cooling tower for low load times. We then connected this plant to our east campus, which has approximately 250,000 sq. ft. of space, via underground directional bore 8" HDPE supply and return pipes, totaling 1800 feet in length. The two main loop pumps were upsized to 250 HP each and fitted with variable frequency drive controls so that the existing plant could handle the additional square footage plus the two new buildings in the process of construction.

"In addition, all indoor campus lighting was replaced or retrofitted with electronic lighting or compact fluorescents. All high pressure steam condensate traps were replaced with modern units. And most importantly, we added a Tridium software system to pick up all of our various control systems to give us web based global control of all our buildings. We also changed all flush valves to low flow as well as tank type toilets, and we added aerators to all hand sinks and showers.

"We are projected to save $694,000. This is from our baseline year utilities cost of about $2.6 million. Our savings period started July 1st of 2005. Although we are still in our first year, we are already seeing substantial reductions in our electrical demand and kwh usage. These are showing progressive improvements since the completion of the EEMs. Our energy management system monitors building and outside temperatures and handles predetermined temperature set backs. Our performance contractor constantly monitors our system temperatures from their Charlotte office via the Web. They can see real time changes and efficiencies. We also hired a third-party verifier, Engineering Economics, to monitor our progress and verify savings quarterly."

COLLEGES WITHOUT HOUSING

Historical Trend

South Carolina colleges without housing reported an increase of 26 percent in their total square footage from fiscal year 1998 to 2004. Table 13 also indicates that during the same period, total energy cost increased by 38 percent, and total kBtu increased by 2 percent. The average energy cost per square foot increased by 13 cents, and the average kBtu per square foot fell from 82.74 to 71.52. In fiscal year 2004, these colleges saved an estimated $1.4 million through energy efficiency, as compared to fiscal year 1998 (See Appendix D).

Table 13. Energy Use Statistics for Colleges Without Housing, FY1998-FY2004

Fiscal Year	Square Feet (in millions)*	Total Energy Cost (in millions)*	Cost per Square Foot**	Total kBtu (in millions)*	kBtu per Square Foot**
1997-98	6.1	$7.1	$1.12	541.4	82.74
1998-99	6.3	$7.2	$1.11	478.2	71.30
1999-00	6.6	$7.8	$1.16	523.7	75.83
2000-01	6.9	$8.6	$1.24	547.7	79.03
2001-02	7.2	$8.6	$1.21	531.9	74.20
2002-03	7.1	$8.9	$1.27	526.9	75.19
2003-04	7.7	$9.8	$1.25	551.9	71.52

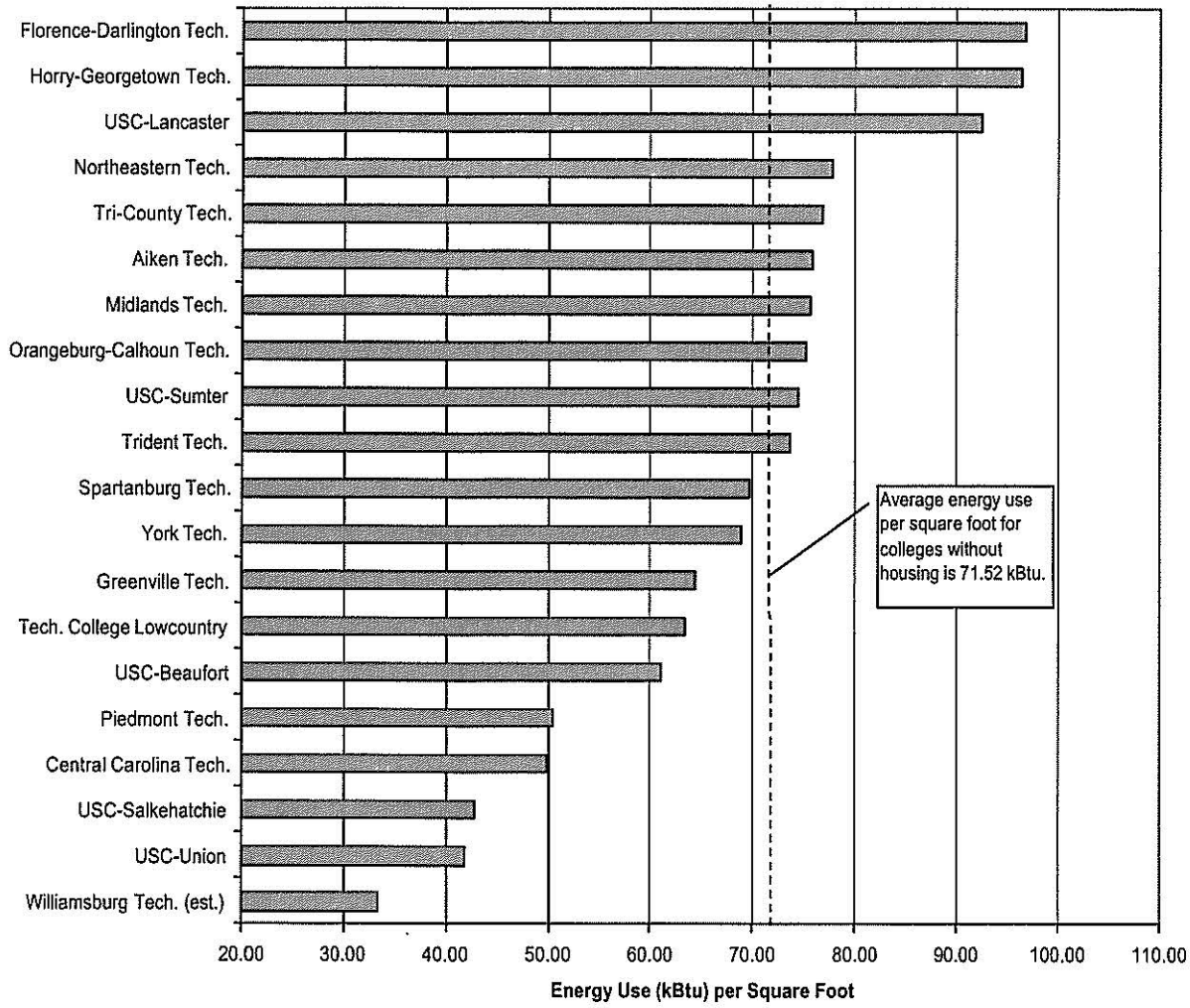
*Includes the total space, total cost and total usage reported.
**These numbers represent the adjusted cost per square foot and use (kBtu) per square foot.

Energy Use (kBtu) per Square Foot, Fiscal Year 2004

The average energy use for all "normal use" facilities at the 20 institutions is 71.52 kBtu per square foot, down from 75.19 in 2003. Average energy use for the individual institutions ranged from 41.79 to 96.81 kBtu per square foot, with the median being 71.67 kBtu per square foot.

Figure 8. displays the ranking of colleges without housing by energy use per square foot using adjusted data.

Figure 8. Colleges without Housing, Energy Use per Square Foot, FY2004



The six colleges without housing that have the lowest energy use (kBtu) per square foot are highlighted in Table 14.

Table 14. Colleges without Housing, Lowest Energy Use per Square Foot, FY2004

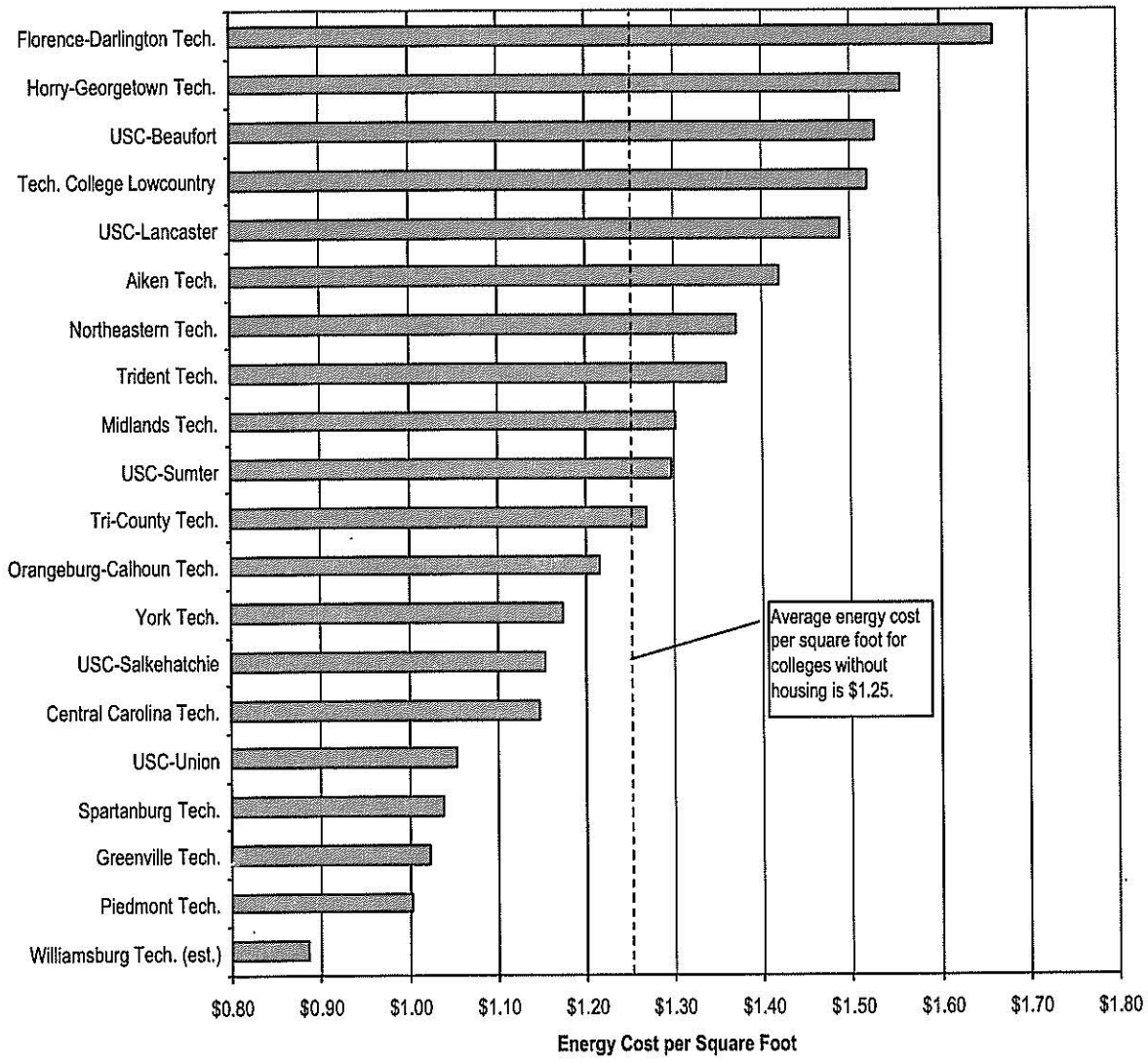
College	Square Footage	kBtu/sf
University of South Carolina - Union	59,016	41.79
University of South Carolina - Salkehatchie	113,564	42.82
Central Carolina Technical College	233,529	49.96
Piedmont Technical College	424,016	50.56
University of South Carolina - Beaufort	82,283	61.12
Technical College of the Lowcountry	143,246	63.49

Energy Cost per Square Foot, Fiscal Year 2004

The average energy cost per square foot for individual colleges without housing ranged from $1.00 to $1.66, with a median of $1.28. The average cost per square foot for all "normal use' facilities was $1.25, which was down 2 cents from 2003 and 7 cents lower than the national median energy cost per square foot of $1.32 for two-year colleges.[5]

Colleges without housing are ranked by energy cost per square foot using adjusted data in Figure 9.

Figure 9. Colleges without Housing, Energy Cost per Square Foot, FY2004



[5] *American School and University.* "Steady Spending: 11th Annual College M&O Cost Study," April 2005, www.asumag.com.

The six colleges without housing that have the lowest reported energy cost per square foot for 2004 are shown in Table 15.

Table 15. Colleges without Housing, Lowest Energy Cost per Square Foot, FY2004

College	Square Footage	$/sf
Piedmont Technical College	424,016	$1.00
Greenville Technical College	1,536,807	$1.02
Spartanburg Technical College	408,724	$1.04
University of South Carolina – Union	59,016	$1.05
Central Carolina Technical College	233,529	$1.15
University of South Carolina - Salkehatchie	113,564	$1.15

TECHNICAL COLLEGE IN THE SPOTLIGHT: GREENVILLE TECHNICAL COLLEGE

With over a million square feet of facilities on four campuses, Greenville Technical College has the largest physical plant of the 20 South Carolina public colleges without housing. Despite its size and complexity, the college achieved a low energy cost of $1.02 per square foot in fiscal year 2004.

Greenville Tech's energy cost control program is based on its facilities management system. The college has installed direct digital controls on the air handling systems and HVAC equipment, and all buildings are linked via the campus Ethernet to the central system. Each building has a customized operating schedule which is adjusted weekly based on scheduling information provided to its Facilities Maintenance unit by the building coordinator.

Tightening up building schedules yielded cost savings of $60,000 in fiscal year 2003. The college achieved $12,000 additional savings by installing occupancy sensors in classrooms to shut off lights and place ventilation on stand-by when a room is not occupied. As buildings are renovated, the HVAC systems are converted from multi-zone to variable air volume with controls to permit greater use of occupancy sensors.

Facilities staff can log on a Duke Power web site and monitor electric meter readings on a day-to-day basis to gauge the impact of operational changes. Duke further supports the college's cost control efforts by meeting with Facilities staff yearly to review rate schedules for every building. The utility recommended Greenville Tech "totalize" several buildings, grouping individual meters into one service to obtain a better rate. In fiscal year 2004, the changes in utility rates saved $17,000.

Current projects include installation of an electric boiler to replace one of two gas boilers. The electric boiler will run during off-peak hours to take advantage of Duke's variable rates for off-peak loads. The college is also installing chilled water system controls to optimize the sequencing and loading of two chillers to reduce overall power consumption.

The staff of the Facilities Maintenance and Renovations unit reduces project implementation costs by doing installation work in-house when possible. They further defrayed project costs by using $36,589 from the South Carolina Energy Office's Rewards for Higher Education Energy Efficiency Program. Don Naylor is the Director of Building Maintenance, and Ted Westervelt is the Project Manager/Associate Engineer. Administrative Assistant Betty Weaver is responsible for adjusting weekly building operation schedules and tracking utility data.

CONCLUSION

In developing a report such as this, accuracy and detail of data are always critical issues. As data is received each fiscal year, comparisons are made to the data from previous years to identify inconsistencies, and correct any past or current data problems. With this increasingly accurate historical database, the South Carolina Energy Office is able to make detailed year-to-year comparisons among entire facilities as well as among individual buildings.

Each public institution that participates in this study receives a customized written report that details its cost and use per square foot data and provides comparisons to the average for facilities in the same category. These comparisons are extremely effective in identifying institutions with unusually high energy usage and/or expenditures, which can then be cross-referenced against the detailed, building-by-building data (provided by most public entities) to locate specific problems. Once these problems are identified, the Energy Office can provide technical assistance through our Rebuild South Carolina program.

Through the Rebuild South Carolina program, energy technicians perform energy audits of the facilities to locate problems. The auditors then propose solutions to these problems, such as lighting retrofits and improving the efficiency of HVAC systems. If institutions need assistance in order to finance such energy saving procedures, the Energy Office's ConserFund energy financing program can provide low-interest loans for the implementation of energy efficiency measures. Institutions are able to repay the loans from the cost savings achieved as a result of energy-efficient improvements.

The alliance of the South Carolina Energy Office with SchoolDude.com and its web-based energy accounting system, UtilityDirect, provides public entities a convenient and powerful tool for tracking their energy costs and usage. The statewide database created by this system will enable the Energy Office to compare middle schools, high schools, portables, offices, classroom buildings, labs, etc. The ability to make more "apples-to-apples" comparisons increases the validity of the data and helps us identify patterns of high-energy use and cost within certain types of facilities. When such patterns are identified, the Energy Office works with institutions to address problems and propose solutions. The UtilityDirect system from SchoolDude.com also facilitates the submittal of the required annual energy consumption report from each public institution to the Energy Office.

Because of the need for accountability in government, it is increasingly important to be able to pinpoint the sources of all expenditures incurred within an institution. As reports such as this one reach the hands of our public officials, they can be an effective tool to identify potential dollar savings. As public needs necessitate government expenditure cutbacks, the response has frequently been to downsize, thereby eliminating jobs and services in many cases. However, the

volume of potential dollar savings that can be realized through energy conservation within public institutions is tremendous. Information on potential cost savings can be extremely valuable, as it presents alternatives which will not only increase energy efficiency, but may also enhance program services.

This report summarizes the energy consumption and cost data submitted to the South Carolina Energy Office each fiscal year. This data helps convey to the public, to agency leaders, and to public facility managers the manner in which public facilities are consuming energy, and can serve as a methodological tool which will help them improve their performance. It is impossible to evaluate performance in energy efficiency without using standard measures. Presentation of these measures in an accurate and systematic manner is the primary purpose of this report.

APPENDIX A: LEGAL REQUIREMENTS

This report is mandated by the South Carolina Energy Conservation and Efficiency Act, Section 48-52-620 (E). The principal purposes of this report are twofold:

(1) To compile factual information on the current use and cost of energy for state agencies and public school districts; and
(2) To ensure that state government agencies establish comprehensive energy efficiency plans and become models for energy efficiency in South Carolina, and assist the Department of Education in achieving energy efficiency in public schools [Section 48-52-420 (9)].

The preparation of this report assists in accomplishing several other purposes important to energy conservation, namely:

(3) To ensure that internal governmental energy use patterns are consistent with the State's long range interests [Section 48-52-210 (B) (9)];
(4) To ensure that short-term energy decisions do not conflict with long range energy needs [Section 48-52-210 (B) (8)];
(5) To define baseline energy use measurements; and
(6) To assist in establishing standards for energy efficiency and building performance.

APPENDIX B: RESPONDING AND NON-RESPONDING ENTITIES

Note: Institutions in bold letters used the UtilityDirect web-based accounting system to report energy cost and usage.

School Districts:

Responding

Abbeville
Aiken
Allendale
Anderson 1
Anderson 2
Anderson 3
Anderson 4
Anderson 5
Bamberg 1
Bamberg 2*
Barnwell 19
Barnwell 29
Barnwell 45
Beaufort
Berkeley
Calhoun
Charleston
Cherokee
Chester
Chesterfield
Clarendon 1
Clarendon 2
Colleton
Darlington
Dillon 1
Dillon 2
Dillon 3
Dorchester 2
Dorchester 4
Edgefield
Fairfield
Florence 1
Florence 2
Florence 3
Florence 4
Florence 5
Georgetown
Greenville
Greenwood 50
Greenwood 51
Greenwood 52
Hampton 1
Hampton 2
Horry
Jasper
Kershaw
Lancaster
Laurens 55
Laurens 56
Lee
Lexington 1
Lexington 2
Lexington 3
Lexington 4
Lexington 5
Marion 1
Marion 2
Marion 7
Marlboro
McCormick *
Newberry
Oconee
Orangeburg 3
Orangeburg 4
Orangeburg 5
Pickens
Richland 1
Richland 2
Saluda
Spartanburg 1
Spartanburg 2
Spartanburg 3
Spartanburg 4
Spartanburg 5
Spartanburg 6
Spartanburg 7
Sumter 2
Sumter 17
Union
Williamsburg
York 1
York 2
York/Rock Hill 3
York 4

*Indicates school district submitted incomplete data for one or more buildings.

Not Responding
Clarendon 3

State Agencies:

Responding

Agriculture, Dept. of
Arts Commission
Commerce, Aeronautics Division
Commerce, Public Railways Division
Corrections, Dept. of
Disabilities and Special Needs, Dept. of
Education, Dept. of
Educational Television Network
Employment Security Commission
Forestry Commission
General Services Division, Budget and Control Board
Health and Environmental Control, Dept. of
John de la Howe School
Juvenile Justice, Dept. of
Labor, Licensing and Regulation, Dept. of
Mental Health, Dept. of
Military Dept. (Adjutant General)
Natural Resources, Dept. of *
Parks, Recreation and Tourism, Dept. of
Patriots Point Development Authority
Public Safety, Dept. of
Public Service Authority (Santee Cooper)
School for the Deaf and the Blind
Sea Grant Consortium
State Fleet Management
State Law Enforcement Division
State Ports Authority
Transportation, Dept. of
Headquarters and 6 DOT Districts
DOT District 1, UtilityDirect
Vocational Rehabilitation Dept.
Wil Lou Gray Opportunity School

* Indicates agency submitted incomplete data for one or more buildings.

Not Responding

Old Exchange Building Commission

Leased State Agency Facilities:

The Budget and Control Board, General Services Division leases and/or manages facilities for many state agencies and reports their energy consumption. The following agencies have some or all of their space included in the General Services report:

Adjutant General
Administrative Law Judges
Agriculture Department
Archives and History Department
Attorney General's Office
Budget and Control Board
Commission for the Blind
Comptroller General's Office
Education Department
Election Commission
Employment Security Commission
Governor's Office of Executive Policy and Programs
Governor's Mansion Complex
Health and Environmental Control Dept.
Judicial Department
Legislature
Museum Commission
Natural Resources Department
Parks, Recreation, and Tourism
Probation, Parole and Pardon Services
Public Safety
Revenue Department
Secretary of State
Social Services Department
State Library
State Treasurer's Office
Transportation Department

Agencies that lease space not owned or managed by the state do not report their energy consumption. These agencies include:

Alcohol and Other Drug Abuse Services
Commerce Department
Consumer Affairs Department
Ethics Commission
Health and Human Services Department
Higher Education Commission
Housing, Finance and Development Authority
Human Affairs Commission
Insurance Department
Lottery Commission
Public Service Commission
Regulatory Staff, Office of
Second Injury Fund
Technical and Comprehensive Education Board
Workers' Compensation Commission

Colleges with Housing:

Responding

The Citadel
Clemson University
Coastal Carolina University
College of Charleston
Denmark Technical College
Francis Marion University
Lander University
Medical University of South Carolina
University of South Carolina - Columbia
University of South Carolina - Aiken
University of South Carolina - Upstate
Winthrop University

Not Responding
South Carolina State University

Colleges without Housing:

Responding

Aiken Technical College
Central Carolina Technical College
Florence-Darlington Technical College
Greenville Technical College
Horry-Georgetown Technical College
Midlands Technical College
Northeastern Technical College
Orangeburg-Calhoun Technical College
Piedmont Technical College
Spartanburg Technical College
Technical College of the Lowcountry
Tri-County Technical College
Trident Technical College
University of South Carolina - Beaufort
University of South Carolina - Lancaster
University of South Carolina - Salkehatchie
University of South Carolina - Sumter
University of South Carolina - Union
York Technical College

Not Responding
Williamsburg Technical College

APPENDIX C: INFORMATION RECEIVED FROM RESPONDENTS

Information Requested

Organizations are asked to report the following information for each of their buildings:

- Building name and address
- Date of construction and dates of any subsequent retrofits/additions
- Square footage for heated space and for unheated space
- Primary building use category
- Typical periods of operation—hours per day, days per week, weeks per year
- Energy consumption and cost by month for each energy source: electricity, natural gas, fuel oil, propane, coal and kerosene

Separate reports are requested for portable or mobile structures and for exterior lighting.

Form of Submission

Organizations may submit consumption data by any of the following methods:

- Completion of the Energy Consumption Report Form provided by the Energy Office
- Submission of the requested information in another energy accounting format used by the organization or its energy management contractor
- Entering building information and consumption data via the UtilityDirect web site.

UtilityDirect

UtilityDirect is a web-based energy accounting system. Subscribers to the system set up accounts for each building and enter monthly utility bill information to track consumption and costs. The Energy Office can view each organization's accounts and retrieve the data needed to prepare the Annual Energy Consumption Report.

Level of Detail

Although the Energy Office requests separate reports for each building, some organizations submit only combined reports for their facilities. The level of detail and reporting method used by respondents in fiscal year 2004 is summarized in Table 11.

Table 11. Data Received by Reporting Method and by Level of Detail, FY2004

	Energy Office Form	Other Form	UtilityDirect	No Report	Total
School Districts	**39**	**15**	**30**	**1**	**85**
By Building	38	15	30		
Combined	1	0	0		
State Agencies	**24**	**1**	**12**	**1**	**38**
By Building	21	1	12		
Combined	3	0	0		
Colleges w/Housing	**7**	**0**	**5**	**1**	**13**
By Building	4	0	5		
Combined	3	0	0		
Colleges w/o Housing	**14**	**1**	**4**	**1**	**20**
By Building	12	1	4		
Combined	2	0	0		
All Categories	**84**	**17**	**51**	**4**	**156**
By Building	75	17	51		
Combined	9	0	0		

APPENDIX D: METHODOLOGY FOR ENERGY SAVINGS

The methodology used to determine the amount of energy savings for each category in this report (school districts, state agencies, colleges with housing, and colleges without housing) first entailed multiplying the fiscal year 2004 adjusted square footage by the fiscal year 1998 energy use (kBtu) per square foot. This result is a projection of the total kBtu the respective category would have used in fiscal year 2004 if not for energy conservation measures. Secondly, this total kBtu number is multiplied by the fiscal year 2004 cost per kBtu, resulting in the projected amount that would have been spent in fiscal year 2004 based on fiscal year 1998 energy use rates. Finally, the actual energy expenditures in fiscal year 2004 are subtracted from the projected amount, yielding the cost savings attributed to energy conservation.

Table 1. Energy Data for Estimated Energy Savings

Institutions	FY2004 Square Footage (in millions)	FY2004 Energy Cost (in millions)	FY1998 Average kBtu/Sq.Ft.	FY2004 Average $/kBtu	FY2004 Average kBtu/Sq.Ft.
School Districts	103.3	$99.15	45.02	$0.0208	46.20
State Agencies	19.4	$30.61	127.44	$0.0134	118.11
Colleges with Housing	27.2	$37.71	140.06	$0.0112	123.92
Colleges without Housing	7.2	$9.04	82.74	$0.0175	71.52
Totals	157.1	$176.51			

Figures do not necessarily sum due to independent rounding.