



Illinois State Building Energy Expense Study FY2016
And Projected FY2017-2019





Illinois
Department of Commerce
& Economic Opportunity

OFFICE OF ENERGY & RECYCLING

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Executive Summary

In this report, The Illinois Department of Commerce and Economic Opportunity's Office of Energy & Recycling (Energy Office) summarizes energy costs for Illinois state buildings, by fuel type and agency, for FY12 through FY16. It also projects energy costs for FY17 through FY19, based on previous expenditures of representative state agencies and forecasted fuel prices.

Energy consumption for FY16 was 15,141,636 MMBtu (Million Btus), which is an 11.4% decrease from FY15. The likely reasons for this are relatively milder weather, building consolidations, and steps the State has taken to proactively reduce its energy consumption. In FY16, heating degree days were 24.5% below normal, representing a 20.2% increase in heating degree days in FY16 from FY15. Cooling degree days, on the other hand, were 43.6% above normal, representing a 22.8% increase, however the energy required for cooling is significantly less than heating and costs for heating fuels greater than electricity used for cooling, so the net impact is the expected decrease in both energy consumption and costs (discussed further below). Additionally, over the last several years, the State has continued to consolidate its the number of properties it occupies, as well as, enacted many measures to lower energy consumption, including: lowering building set points in winter and raising them in summer, pursuing performance contracts, performing retrocommissioning and energy audits of state buildings, and completing energy efficiency projects with the support of the Energy Office's Illinois Energy Now grants and rebates.

In turn, the decrease in energy consumption explains the decrease in energy costs. During FY16, the State of Illinois spent \$168,547,152 on the natural gas, electricity, coal, oil, propane, and steam to operate state-owned and leased buildings. This is a 6.1% decrease from FY15. Across State agencies, there was a 4.3% increase in electricity costs in FY16 from FY15, which can be attributed to higher cooling energy. There was a 28.4% decrease in natural gas costs, which can be attributed to lower heating energy consumption. Coal consumption costs saw an increase by 4.1% and fuel oil a decrease of 35.7%. In addition to lowered consumption, energy costs were impacted by two additional factors. First, the State has continued to consolidate large purchases of natural gas, and second, in the last four years, aggregated purchasing of electricity has continued for all large users in the Commonwealth Edison and Ameren service territories. This has had a dramatic impact on stabilizing energy costs for the State well below the private sector. Also, it is worth noting, that there was neither a decrease nor an increase in the State's contribution to public universities for energy costs (66.2% in FY15 & FY16).

Looking forward, energy costs are projected to increase to as much as \$29 million by FY19, due forecasted fuel price increases, including a slight increase in electricity and a more significant increase in natural gas prices. Price forecasts are derived from the U.S. Energy Information Administration's 2017 Short-Term Fuel Outlook. These are national forecasts, so it should be recognized that regional market differences could have an impact on price, but the Energy Office considers these forecasts reasonable and conservative. It should also be noted that cost projections assume normal weather patterns, but deviations from those patterns can also have significant impacts on consumption and costs.

The Energy Office will continue to support state building managers and encourage them to decrease energy consumption and mitigate these increasing energy costs. In the past the Energy Office collaborated with the Department of Corrections to complete major energy upgrades with the support of its grants and rebates. The Energy Office will also continue to provide outreach and technical assistance to facility managers, to promote the use of utility energy efficiency program, energy savings performance contracts, and other energy programs, which over the past ten years have resulted in cost savings of over \$82 million.

➤ **Figure 1**

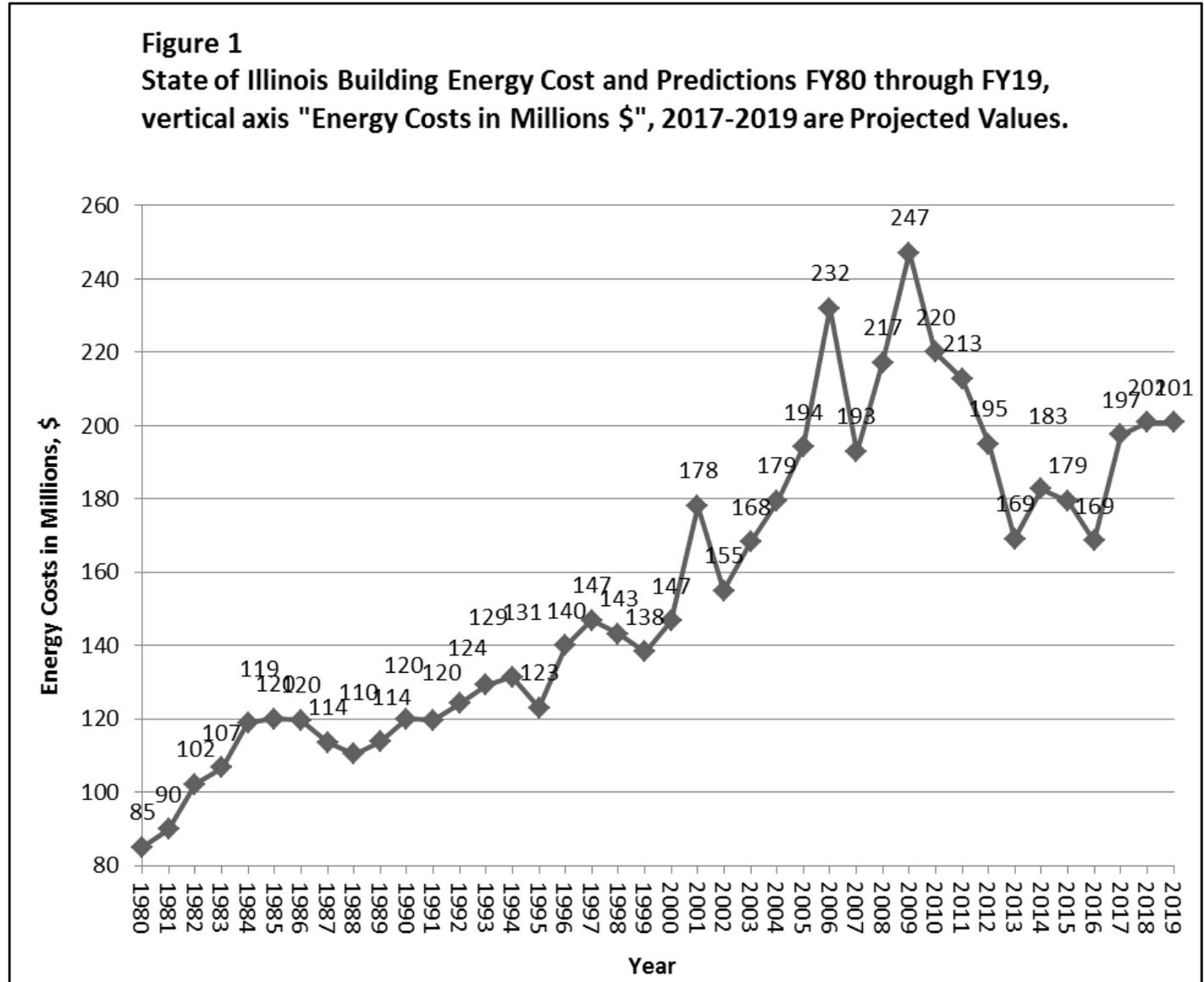
Figure 1 illustrates the energy cost history for Illinois state buildings from FY80 through FY16 and cost projections for FY17-19.

State buildings' energy expenditures steadily increased from FY80 through FY84. From FY84 through FY86 the costs were essentially level due to falling fossil fuel prices. FY87 and FY88 building costs decreased because of some lower utility rates and energy conservation.

Except for FY95, when there was a dip in natural gas prices, expenditures for fuels increased from FY91 through FY97 due to steadily increasing fuel prices and the addition of new buildings. Electricity and natural gas prices declined at state facilities in FY98 and FY99.

The spikes in energy costs in FY01 and FY03 through FY06 were a result of natural gas and electrical price fluctuations. FY09 saw a large spike in all energy prices, but FY10 through FY13 saw an even larger decrease in costs due to declining fuel costs, building consolidations, and the State's efforts to reduce energy consumption. The slight increase in FY 14-15 can be attributed to the increase in heating costs due to weather conditions, and costs came back down in FY16.

The projections from FY16 to FY19 are based on data from Table A-3 (State Building Energy Costs and Projections), which details costs for various fuel sources, and projected consumption patterns. For simplicity in calculation it was assumed that the amount of energy consumed, in terms of Btus, would remain constant from FY17 to FY19 (assuming normal weather conditions). Energy usage and weather data since FY00 were used to determine how much energy the State would have used if the weather during FY16 had been normal (6,727 heating and cooling degree days). This value was then used in the projections. The description of Table A-3 explains the methodology.



Tables 1 and 2 list the building energy cost and consumption figures for the 10 Illinois agencies or departments that incurred the highest energy costs during FY16. Universities, the Department of Corrections (DOC), and the Department of Central Management Services (CMS) were the three largest users of energy, expending 39.4 percent, 14.4 percent and 11.9 percent of the total state building energy costs respectively.

Electricity accounted for nearly 73.0 percent of the total energy cost, but only 35.3 percent of the total energy consumed (see Figures 3 and 4). At the same time, natural gas accounted for 23.3 percent of the total energy cost, yet was 59.0 percent of the total energy consumed. This illustrates that electricity costs are considerably more per Btu of energy than natural gas.

Figure 2, 3, and 4 display the same information graphically.

➤ **Table 1**

The energy expenditures in this study are taken from the Comptroller’s Data Warehouse for FY16. The energy consumption of 83 state agencies, which utilize over 131 million square feet of buildings, is included. The state agencies that are listed individually in this report were chosen because each one accounts for approximately 1 percent or more of the total state buildings energy costs in each year. The remainder is listed under “All Others.” Those energy expenditures made by leased facilities that pay a constant rental charge, but do not pay for utilities directly, are not included in this report.

Table 1 shows the amount of funds (excluding gasoline expenditures) that was spent on energy by the State. The energy costs incurred by Universities are taken directly from Board of Higher Education report. The remainder is taken from the FY16 Comptroller’s Data Warehouse. The specific accounts, from which expenditures are included, are listed below.

Account 1251 – Natural Gas

The account includes charges for natural gas furnished by public utilities. This excludes repair, maintenance, rental or equipment sales.

Table 1

State of Illinois FY16 Building Energy Cost (\$)¹

Agency²	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Energy Cost³	% of Total Building Energy Cost
Universities⁴	22,968,003	39,755,883	3,110,031	526,158	***	66,360,074	39.4
Corrections	5,649,524	18,041,034	464,959	38,832	***	24,194,349	14.4
Human Services	3,303,765	7,459,492	1,126,882	425	***	11,890,564	7.1
Central Management Services⁵	2,194,953	17,806,498	***	***	***	20,001,451	11.9
Transportation	896,909	11,887,329	***	76,157	***	12,860,395	7.6
Secretary of State	1,247,254	11,286,638	187,868	5,243	***	12,727,003	7.6
Illinois Tollway	612,994	4,179,451	***	***	***	4,792,445	2.8
Natural Resources	189,273	2,618,974	***	253,841	***	3,062,088	1.8
Military Affairs	572,865	2,392,724	***	58,639	***	3,024,228	1.8
State Police	33,596	321,640	***	13,211	***	368,448	0.2
All Others⁶	1,614,161	7,300,597	339,884	11,467	***	9,266,108	5.5
Total	\$39,283,297	\$123,050,259	\$5,229,624	\$983,972	\$0	\$168,547,152	100.0

¹ Based on FY16 Comptroller's Data Warehouse records. Natural Gas numbers based on account 1251; Electricity - 1252; Coal - 1341; and Fuel Oil - 1342.

² The agencies in this category expended approximately 1 percent or more of the State's total building energy costs.

³ Gasoline not included.

⁴ Based on FY16 data from Board of Higher Education.

⁵ CMS expenditures and energy use contain data from multiple agencies.

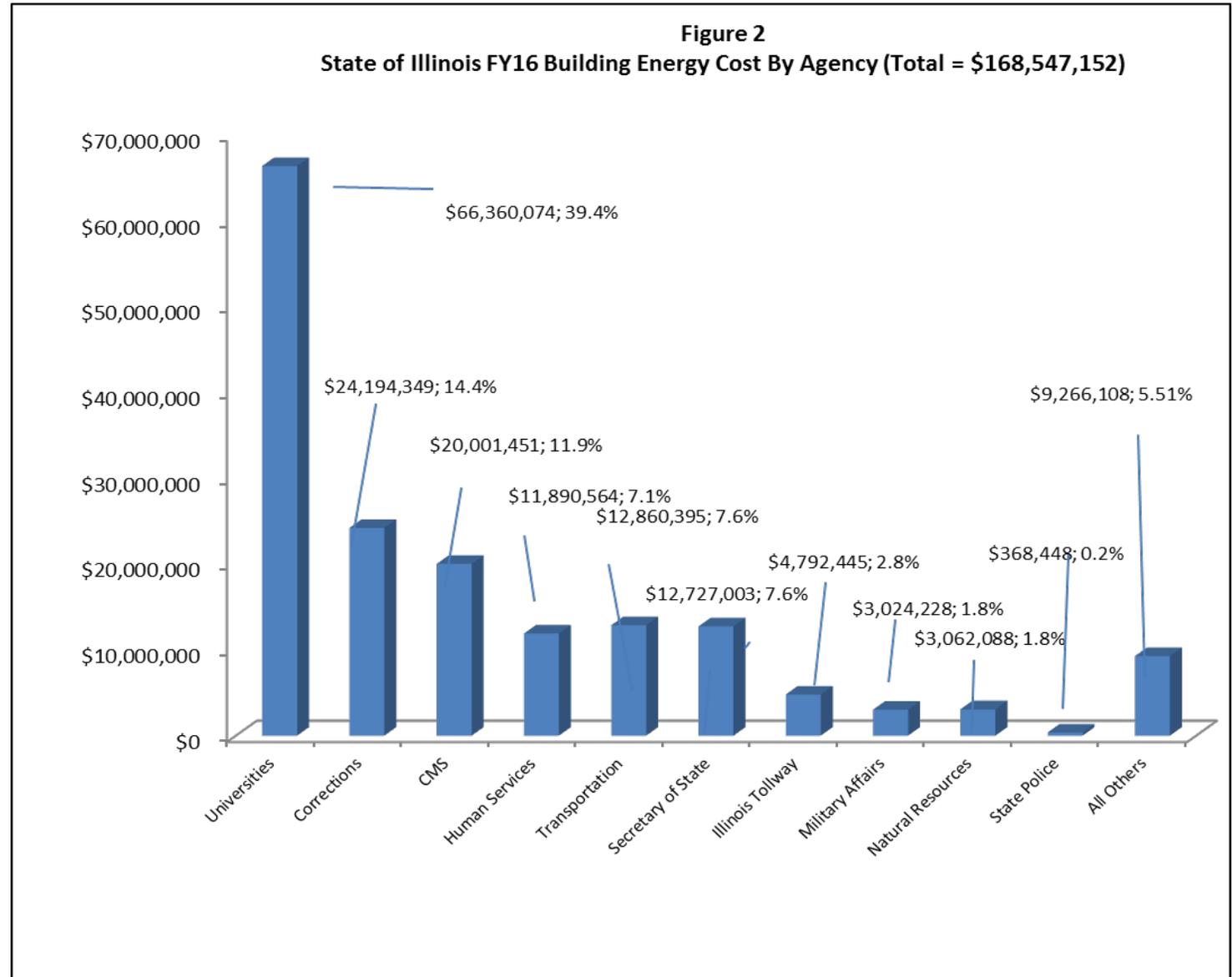
⁶ All remaining state agencies.

➤ **Figure 2**

Figure 2 illustrates building energy cost for the ten (10) Illinois agencies that incurred the highest energy costs for FY16. Universities, the Department of Corrections, and the Department of Central Management Services were the three largest single users of energy, expending 39.4 percent, 14.4 percent, and 11.9 percent of the total state building energy costs, respectively.

The energy expenditures in this study were taken from the Comptroller's Data Warehouse for FY16. The state agencies that are listed individually in this report were chosen because each one accounts for approximately 1 percent or more of the total state buildings energy costs in each year. The remainder is listed under "All Others." Those energy expenditures made by leased facilities that pay a constant rental charge, but do not pay for utilities directly, are not included in this report.

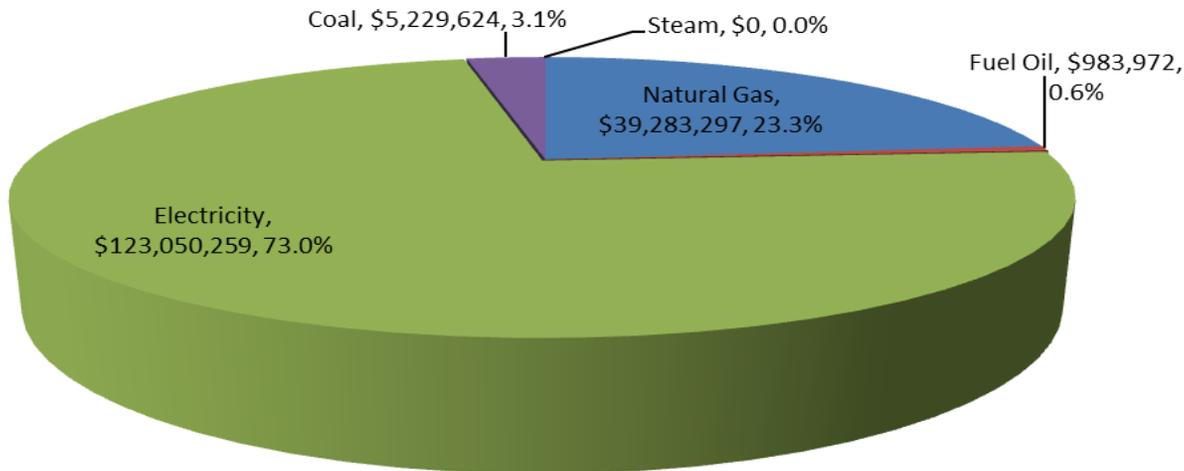
Expenditures by CMS contain data from multiple agencies.



➤ **Figure 3**

Figure 3 illustrates the state buildings energy cost for FY16 presented graphically by fuel type. Data from Table 1 was used to show that electricity accounts for the greatest energy cost: 73.0 percent of the total of all buildings' energy costs. Natural gas cost accounts for 23.3 percent of the total energy costs followed by coal, fuel oil and steam which account for 3.1 percent, 0.6 percent, and 0 percent, respectively.

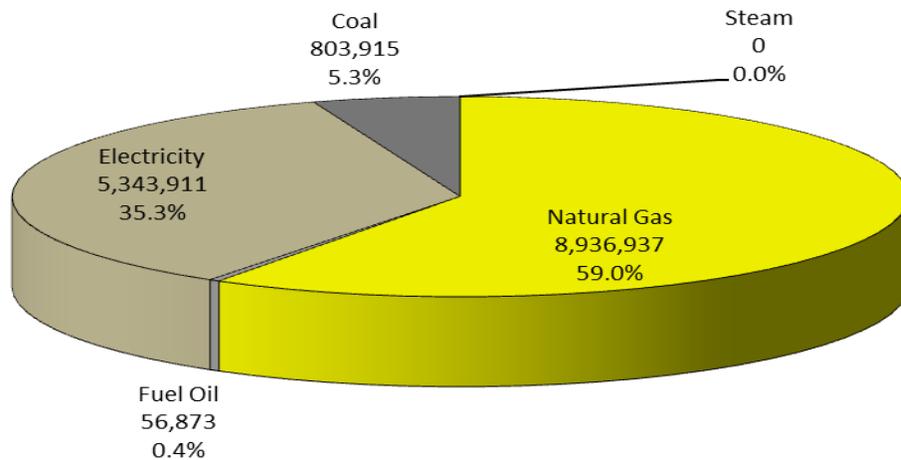
Figure 3
State of Illinois FY16 Building Energy Cost by Fuel Type (Total = \$168,547,152)



➤ **Figure 4**

Figure 4 illustrates the state buildings energy consumption for FY16 presented graphically by fuel type. Data from Table 2 was used to show that natural gas accounts for the highest fuel consumption: 59.0 percent of the total of all buildings' energy consumption. Electricity consumption accounts for 35.3 percent of the total buildings' energy consumption followed by coal, fuel oil and steam which account for 5.3 percent, 0.4 percent, and 0 percent, respectively.

Figure 4
State of Illinois FY16 Building Energy Consumption by Fuel Type (Total = 15,141,636 x 10⁶ Btu)



➤ **Table 3**

Table 3 lists the 10 agencies' energy and cost index numbers, which can be used for monitoring the progress of an energy conservation program. The building area figures used to generate these index numbers are only estimates because accurate agency totals are not readily available. The wide range of energy index numbers is due to the various types and uses of buildings by the different agencies.

In Table 3, cost index numbers and energy index numbers are generated by using information from Tables 1 and 2 and gross building area data from each state agency. The gross building area figures are obtained directly from the agencies and compared to Capital Development Board records. The energy and cost index numbers that appear in Table 3 include some energy charges for leased buildings for which the State pays the utility costs.

Many of the building area table figures are updated from previous reports as new and more accurate information becomes available. Agency-to-agency facility transfers and closings and new building openings all contribute to overall building inventory changes. Changes in agency gross area can mean similar differences in both cost and energy index numbers when compared from year to year. Such changes can yield discontinuity from year to year and can alter significantly the current energy cost and use position of those affected.

Table 3

State of Illinois FY16 Building Energy Index Number Data

Agency	Fuel Cost Total	Energy Use Total (x 10⁶ Btu)	Building Area^{1, 4} (x 10⁶ Sq. Ft)	Energy Index² Btu/Sq. Ft /Yr.	Cost Index³ \$/Sq. Ft /yr.
Universities	\$66,360,074	7,067,689	76.55	92,328	0.87
Corrections	\$24,194,349	2,566,222	15.46	165,991	1.56
Human Services	\$11,890,564	1,800,101	9.10	197,813	1.31
Central Management Services⁵	\$20,001,451	1,064,988	6.38	166,926	3.14
Transportation	\$12,860,395	623,480	4.23	147,395	3.04
Secretary of State	\$12,727,003	718,891	3.79	189,681	3.36
Illinois Tollway	\$4,792,445	265,763	3.82	69,571	1.25
Natural Resources	\$3,062,088	149,411	1.88	79,474	1.63
Military Affairs	\$3,024,228	191,301	4.02	47,616	0.75
State Police	\$368,448	20,287	0.78	25,866	0.47
All Others	\$9,266,108	673,503	4.97	135,514	1.86
Total	\$168,547,152	15,141,636	131	119,834	1.75
			Total	Average	Average

¹ Accurate building area figure not available.

² Energy Index = Amount of energy used per square foot per year.

³ Cost Index = cost of energy used per square foot per year.

⁴ These figures are estimates based on best available data and may change from year to year as current data becomes available. See Table 3 description for further clarification. Some figures were obtained from CMS/ERC database.

⁵ CMS expenditures and energy use contain data from multiple agencies.

Tables 4 and 5 show State of Illinois buildings' energy cost and consumption comparisons for FY12 through FY16. The data show a total cost decrease of 6.1 percent from FY15 to FY16 and a consumption decrease of 11.4 percent for the same period.

➤ **Table 4**

Table 4 gives a five-year energy cost history for the different agencies reported and then compares each year's cost to the previous year's to give a percentage cost change. The data in the five columns are taken from the various cost tables from this report.

Cost variations from year to year can be attributed to several factors that are listed below.

1. *Fuel Prices*

Fuel prices for the last seven years have had drastic increases as compared to the relatively stable prices in the 80's and 90's. These increases have been mitigated by purchasing programs instigated by CMS. Changing fuel prices significantly affect the total yearly energy costs.

2. *Weather Conditions*

As noted in the footnote to Table 4, no attempt has been made to adjust the results to reflect climatic variations from year to year and climatic differences from north to south.

3. *Facility Changes*

In recent years factors such as economics have caused the closing or opening of facilities in some agencies. This would have an effect on energy cost from year to year that is not taken into account in this report.

4. *Conservation*

The drastically increasing fuel prices in the past seven years, has again prompted a nationwide awareness of the need for energy conservation. This renewed public awareness has encouraged the state to adopt measures to conserve energy. While the conservation factor is disregarded for cost projections, it has affected the energy cost totals of Table 4.

Table 4

State of Illinois FY12 through FY16 Building Energy Cost Comparison¹

Agency	FY12 Energy Cost (x \$1000)		FY13 Energy Cost (x \$1000)		FY14 Energy Cost (x \$1000)		FY15 Energy Cost (x \$1000)		FY16 Energy Cos (x \$1000)
Universities	89,464.8	(-2.5)	77,219.5	(-13.7)	76,410.3	(-1.0)	79,085.9	(3.5)	66,360.1
Corrections	28,015.3	(-7.2)	24,637.4	(-12.1)	27,864.7	(13.1)	26,431.8	(-5.1)	24,194.3
Human Services	13,030.8	(-9.6)	9,999.2	(-23.3)	11,285.9	(12.9)	10,287.4	(-8.8)	11,890.6
Central Management Services³	21,701.7	(-6.4)	17,224.9	(-20.6)	20,106.9	(16.7)	19,573.1	(-2.7)	20,001.5
Transportation	9,882.1	(-3.7)	9,641.8	(-2.4)	11,849.1	(22.9)	11,350.9	(-4.2)	12,860.4
Secretary of State	11,119.9	(3.9)	10,643.9	(-4.3)	11,511.8	(8.2)	10,199.1	(-11.4)	12,727.0
Illinois Tollway	4,130.7	(2.7)	3,663.2	(-11.3)	4,310.6	(17.7)	4,126.4	(-4.3)	4,792.4
Natural Resources	3,038.3	(-4.1)	2,707.8	(-10.9)	3,496.5	(29.1)	3,413.0	(-2.4)	3,062.1
Military Affairs	3,688.8	(4.2)	3,501.6	(-5.1)	4,316.2	(23.3)	4,149.3	(-3.9)	3,024.2
State Police	1,422.0	(4.6)	1,217.5	(-14.4)	1,522.2	(25.0)	1,596.2	(4.9)	368.4
Children & Family Services³	***	***	***	***	***	***	***	***	***
All Others³	9,417.7	(6.1)	8,602.2	(-8.7)	9,976.5	(16.0)	9,208.1	(-7.7)	9,266.1
Total	212,776.9	(-3.3)	169,059.0	(-20.5)	182,650.7	(8.0)	179,421.3	(-1.8)	168,547.2

¹ Due to diverse weather conditions in Illinois, no attempt has been made to adjust the results to reflect climate severity from year to year and climatic differences from north to south. Representative weather data are shown on Table 5.

² Brackets denote percentage change from previous year.

³ CMS expenditures and energy use contain data from multiple agencies. Starting in FY05, Children & Family Services and some smaller agencies in the All Others group are included in the CMS data.

➤ **Table 5**

Table 5 presents a five-year energy consumption history for the agencies listed, and then compares each year's use to the previous year's to give percentage consumption change. The data in the five columns are taken from the various consumption tables in this report.

Consumption variations from year to year can be attributed to the same factors that affected the cost variations in Table 4 (except fuel prices.)

An indication of weather variation over the last five years is given by the Heating Degree Day and Cooling Degree Day lines at the bottom of the table. A Heating or Cooling Degree Day is a unit, based on temperature difference and time, used in estimating fuel consumption and specifying the nominal heating/cooling load of a building.

The degree day data shown are based on Peoria weather, which is considered to be representative of the state. These data should be used only for identifying weather trends. No attempt should be made to normalize the consumption data given in order to compensate for weather differences.

Table 5

State of Illinois FY12 through FY16 Building Energy Consumption Comparison ¹

Agency	FY12 Energy Consumption (10 ⁹ BTU)		FY13 Energy Consumption (10 ⁹ BTU)		FY14 Energy Consumption (10 ⁹ BTU)		FY15 Energy Consumption (10 ⁹ BTU)		FY16 Energy Consumption (10 ⁹ BTU)	
Universities	8,852.6	(-1.0)	8,017.7	(-9.4)	8,580.8	(7.0)	8,651.4	(0.8)	7,067.7	(-18.3)
Corrections	2,317.1	(-7.4)	2,128.9	(-8.1)	2,615.5	(22.9)	2,384.2	(-8.8)	2,566.2	(7.6)
Human Services	1,639.4	(-12.7)	1,146.6	(-30.1)	1,418.6	(23.7)	1,340.4	(-5.5)	1,800.1	(34.3)
Central Management Services ³	951.9	(-7.3)	798.5	(-16.1)	1,231.5	(54.2)	1,288.1	(4.6)	1,065.0	(-17.3)
Transportation	414.5	(-5.1)	414.1	(-0.1)	673.1	(62.6)	672.0	(-0.2)	623.5	(-7.2)
Secretary of State	661.1	(2.9)	630.4	(-4.6)	795.9	(26.2)	789.3	(-0.8)	718.9	(-8.9)
Illinois Tollway	188.2	(-9.2)	169.3	(-10.1)	268.4	(58.5)	292.9	(9.1)	265.8	(-9.3)
Natural Resources	133.1	(-6.0)	118.3	(-11.1)	201.9	(70.7)	205.1	(1.6)	149.4	(-27.1)
Military Affairs	219.1	(1.8)	68.3	(-68.8)	368.0	(438.9)	385.9	(4.9)	191.3	(-50.4)
State Police	64.3	(6.3)	63.9	(-0.6)	101.7	(59.2)	119.9	(17.9)	20.3	(-83.1)
Children & Family Services ³	***	***	***	***	***	***	***	***	***	***
All Others ³	700.6	(-12.7)	653.1	(-6.8)	962.0	(47.3)	953.8	(-0.9)	673.5	(-29.4)
Total	19,545.3	(-5.2)	14,209.1	(-27.3)	17,217.4	(21.2)	17,082.9	(-0.8)	15,141.6	(-11.4)
HDD ⁴	4,593.0	(3.7)	5,831.0	(27.0)	6,582.0	(12.9)	5,817.0	(-11.6)	4,641.0	(-20.2)
CDD	1,382.0	(20.1)	703.0	(-49.1)	1,294.0	(84.1)	1,148.0	(-11.3)	1,410.0	(22.8)

¹ Due to diverse weather conditions in Illinois, there has been no attempt made to adjust the results to reflect climatic variations from year to year and the climatic differences from north to south. Representative weather data are shown on Table 5

² Brackets denote percentage change from previous year.

³ CMS expenditures and energy use contain data from multiple agencies. Starting in FY05, Children & Family Services and some smaller agencies in the All Others group are included in the CMS data.

⁴ HDD/CDD refers to the Heating Degree Days and Cooling Degree Days for Peoria (Normal HDD = 5,846 and Normal CDD = 982). These numbers should be used for comparing weather trends only. Further discussion on their interpretation is given in the appendix, under Table 5 description.



Photo credit - Mike Casarjow

Appendix

➤ **Table A-1**

This table is prepared using data from U.S. Energy Information Administration. The 2018/2019 numbers are a conservative estimate based on available data.

TABLE A-1

Unit Energy Cost Projection Multipliers¹

Energy Source		2017/2016	2018/2016	2019/2016
Natural Gas	▼	1.1015	1.1035	1.1035
Electricity	▼	1.0269	1.0501	1.0501
Coal	▼	1.0284	1.0473	1.0473
Oil (#2)	▼	1.2333	1.2336	1.2336
Oil (#6)	▼	1.2333	1.2336	1.2336
Steam	▼	1.0103	1.0242	1.0398

¹ Projection multipliers are found by using U.S. Energy Information Administration 2017 Short-Term Energy Outlook report and determining the percent change from the base year (2016).

➤ **Table A-2**

Table A-2 shows the unit energy prices for FY12 through FY19. FY12 through FY16 are actual fuel costs and FY17 through FY19 are projected costs. The projection method used was to multiply the FY16 fuel price by its respective price multiplier from Table A-1, to obtain the specific fuel price for FY17 through FY19. That is current price X projection multiplier = projected price.

This table is prepared using data from the Illinois Board of Higher Education, Distributional Analysis of Energy Usage and Cost FY16 report and the Illinois State Water Survey, Power Plant Efficiency FY16 report.

Table A-2

Unit Energy Costs by Fuel Type

Energy Source	Actual					Projected ¹		
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19
Natural Gas (¢/therm)								
Human Services	84.83	84.83	61.15	48.37	30.05	33.10	33.16	33.16
Universities	78.45	60.01	53.87	53.87	46.16	50.85	50.94	50.94
Electricity (¢/kwh)								
Human Services	9.77	9.77	8.17	7.99	8.49	8.72	8.91	8.91
Universities	7.08	6.69	6.74	6.74	6.74	6.92	7.08	7.08
Coal (\$/ton)								
Human Services	39.28	47.02	44.44	47.02	61.96	63.72	64.90	64.90
Universities	72.59	72.59	44.44	44.44	62.03	63.79	64.97	64.97
Oil (\$/gal)								
Human Services	1.80	2.21	1.63	1.63	2.37	2.93	2.93	2.93
Universities	1.31	2.21	1.63	1.63	2.36	2.92	2.92	2.92
Steam (\$/1000 lb.)								
Universities	14.60	14.60	14.60	14.60	14.60	14.75	14.95	15.18

¹ Projected prices obtained by multiplying FY16 price by its respective projection multiplier (Table A-1).

➤ **Table A-3**

Table A-3 lists energy costs and projections from FY12 to FY19, by fuel types, FY12 through FY16 figures are actual figures and FY17 through FY19 figures are projected. In past reports (pre-FY85), projected costs were obtained by simply multiplying the current utility cost by its respective price multiplier (Table A-1). However, these projections were made assuming that the same amount of energy would be used each year, regardless of weather differences. If the weather during the current year happened to be mild (below normal, as it was in 1985), this led to conservative projections. The weather during the current year was extreme (above normal, as it was in 1984), and then the projections would be over-estimated. To avoid these problems a projection method, which attempts to de-emphasize the weather effect, has been implemented.

The method used to obtain weather-normalized base year cost, for projections, is as follows:

1. Perform a linear regression on consumption totals against total degree days (heating plus cooling) for FY00 through FY16 to obtain the equation for the best fitting line through the data.
2. Substitute the current-year (6,051 DD) degree day number into the equation for the line obtained in step 1.
3. Substitute the normal-year (6,727 DD) degree day number into the equation for the line obtained in step 2.
4. The weather-adjusted normal consumption is the current-year usage plus the usage found in step 3 minus the usage found in step 2. (15,141,636 MMBtu + 18,009,597 MMBtu - 16,200,936 MMBtu = 16,950,297 MMBtu.)
5. Break the weather-adjusted normal consumption (16,950,297 MMBtu) down by fuel types using the percentages from Figure 4.
6. Multiply each of these by its respective fuel cost in Table 1 divided by the respective fuel consumption in Table 2 to get current normalized dollar totals. (Natural Gas = \$43,975,668; Electricity = \$137,748,554; Coal = \$5,854,300; Oil = \$1,101,507; and Steam - \$0).
7. Project from these totals, using the multipliers from Table A-1.

Table A-3

State Building Energy Costs and Projections (x \$1000)

Energy Source	Actual					Projected		
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19
Natural Gas	61,085	52,498	58,798	54,877	39,283	48,439	48,527	48,527
Electricity	125,217	113,146	119,860	117,992	123,050	141,454	144,650	144,650
Coal	7,725	2,668	2,463	5,023	5,230	6,021	6,131	6,131
Oil	885	747	1,529	1,529	984	1,358	1,359	1,359
Steam	0	0	0	0	0	0	0	0
Total	194,912	169,059	182,651	179,421	168,547	197,272	200,667	200,667

➤ **Table A-4**

This table presents the expenditures on energy by the State for the Fiscal Year as reported in the respective Comptroller's Data Warehouse records. The same description and preparation methods as were used in Table 1 apply.

Table A-4

State of Illinois FY15 Building Energy Cost (\$)¹

Agency²	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Energy Cost³	% of Total Building Energy Cost
Universities⁴	34,951,813	41,520,971	2,560,001	53,159	***	79,085,943	44.1
Corrections	7,402,376	18,305,253	623,378	100,814	***	26,431,822	14.7
Human Services	2,761,866	6,472,399	1,051,968	1,119	***	10,287,351	5.7
Central Management Services⁵	2,754,125	16,804,560	***	14,465	***	19,573,150	10.9
Transportation	1,078,287	10,006,529	***	266,083	***	11,350,899	6.3
Secretary of State	1,426,039	8,485,258	280,907	6,938	***	10,199,142	5.7
Illinois Tollway	711,306	3,415,138	***	***	***	4,126,443	2.3
Natural Resources	198,706	2,532,878	***	681,403	***	3,412,987	1.9
Military Affairs	1,195,929	2,632,931	***	320,394	***	4,149,254	2.3
State Police	306,714	1,253,620	***	35,903	***	1,596,238	0.9
All Others⁶	2,089,782	6,562,490	507,070	48,721	***	9,208,062	5.1
Total	\$54,876,942	\$117,992,027	\$5,023,325	\$1,528,998	\$0	\$179,421,291	100.0

¹ Based on FY15 Comptroller's Data Warehouse records. Natural Gas numbers based on account 1251; Electricity - 1252; Coal - 1341; and Fuel Oil - 1342.

² The agencies in this category expended approximately 1 percent or more of the State's total building energy costs.

³ Gasoline not included.

⁴ Based on FY15 data from Board of Higher Education.

⁵ CMS expenditures and energy use contain data from multiple agencies.

⁶ All remaining state agencies.

➤ **Table A-5**

This table shows the amounts of energy consumed, in millions of Btus, by the State, for the Fiscal Year, respectively. The same description and preparation methods as were used in generating Table 2 apply.

Table A-5

State of Illinois FY15 Building Energy Consumption (10⁶ Btu)

Agency ¹	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Consumption	% of Total Building Consumption
Universities ²	6,487,617	2,101,812	57,609	4,358	***	8,651,396	50.6
Corrections ³	1,302,246	781,605	292,117	8,264	***	2,384,232	14.0
Human Services	570,952	276,361	492,956	92	***	1,340,361	7.8
Central Management Services ⁴	569,351	717,528	***	1,186	***	1,288,065	7.5
Transportation	222,911	427,263	***	21,811	***	671,985	3.9
Secretary of State	294,800	362,307	131,634	569	***	789,310	4.6
Illinois Tollway	147,046	145,821	***	***	***	292,867	1.7
Natural Resources	41,078	108,150	***	55,856	***	205,084	1.2
Military Affairs	247,231	112,422	***	26,263	***	385,916	2.3
State Police	63,406	53,528	***	2,943	***	119,877	0.7
All Others	432,014	280,208	237,615	3,994	***	953,831	5.6
Total	10,378,652	5,367,005	1,211,931	125,336	0	17,082,924	100.0

¹ Energy consumption for all agencies, except Universities and Corrections, is based on adjusted average Human Services

FY14 unit energy costs as follows:

Human Services unit costs

Natural Gas \$0.484/therm or \$4.837/10⁶ Btu (1 therm = 100,000 Btu)

Electricity \$0.0799/kwh or \$23.420/10⁶ Btu (1 kwh = 3,413 Btu)

Coal \$47.02/ton or \$2.134/10⁶ Btu (1 lb. = 11,018 Btu)

Oil (#2) \$1.63/gal or \$12.20/10⁶ Btu (1 gal = 138,974 Btu)

² University unit costs:

Universities Unit costs

Natural Gas \$0.539/therm or \$5.4/10⁶ Btu (1 therm = 100,000 Btu)

Electricity \$0.0674/kwh or \$19.76/10⁶ Btu (1 kwh = 3,413 Btu)

Coal \$44.44/ton or \$2.02/10⁶ Btu (1 lb. = 11,190 Btu)

Oil & Propane \$1.63/gal or \$12.20/10⁶ Btu (1 gal = 136,049 Btu)

Steam No steam purchase was reported (1 lb. steam = 1,000 Btu)

➤ **Table A-6**

This table presents the expenditures on energy by the State for the Fiscal Year as reported in the respective Comptroller's Data Warehouse records. The same description and preparation methods as were used in Table 1 apply.

Table A-6

State of Illinois FY14 Building Energy Cost (\$)¹

Agency²	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Energy Cost³	% of Total Building Energy Cost
Universities⁴	34,899,015	41,458,251	***	53,078	***	76,410,344	41.8
Corrections	8,655,723	18,484,806	623,378	100,814	***	27,864,721	15.3
Human Services	3,855,157	6,377,705	1,051,968	1,119	***	11,285,949	6.2
Central Management Services⁵	3,210,407	16,882,002	***	14,465	***	20,106,875	11.0
Transportation	1,375,053	10,207,914	***	266,083	***	11,849,050	6.5
Secretary of State	1,536,551	9,687,372	280,907	6,938	***	11,511,768	6.3
Illinois Tollway	724,937	3,585,629	***	***	***	4,310,566	2.4
Natural Resources	233,375	2,581,753	***	681,403	***	3,496,531	1.9
Military Affairs	1,435,862	2,559,931	***	320,394	***	4,316,187	2.4
State Police	301,139	1,185,199	***	35,903	***	1,522,242	0.8
All Others⁶	2,571,097	6,849,598	507,070	48,721	***	9,976,486	5.5
Total	\$58,798,316	\$119,860,160	\$2,463,323	\$1,528,918	\$0	\$182,650,718	100.0

¹ Based on FY14 Comptroller's Data Warehouse records. Natural Gas numbers based on account 1251; Electricity - 1252; Coal - 1341; and Fuel Oil - 1342.

² The agencies in this category expended approximately 1 percent or more of the State's total building energy costs.

³ Gasoline not included.

⁴ Based on FY14 data from Board of Higher Education.

⁵ CMS expenditures and energy use contain data from multiple agencies.

⁶ All remaining state agencies.

➤ **Table A-7**

This table shows the amounts of energy consumed, in millions of Btus, by the State, for the Fiscal Year, respectively. The same description and preparation methods as were used in generating Table 2 apply.

Table A-7

State of Illinois FY14 Building Energy Consumption (10⁶ Btu)

Agency ¹	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Consumption	% of Total Building Consumption
Universities ²	6,477,817	2,098,637	***	4,351	***	8,580,805	49.8
Corrections ³	1,525,876	772,269	309,106	8,264	***	2,615,515	15.2
Human Services	630,436	266,451	521,626	92	***	1,418,605	8.2
Central Management Services ⁴	525,000	705,306	***	1,186	***	1,231,492	7.2
Transportation	224,863	426,472	***	21,811	***	673,146	3.9
Secretary of State	251,273	404,725	139,290	569	***	795,857	4.6
Illinois Tollway	118,549	149,802	***	***	***	268,351	1.6
Natural Resources	38,164	107,862	***	55,856	***	201,882	1.2
Military Affairs	234,807	106,950	***	26,263	***	368,020	2.1
State Police	49,246	49,516	***	2,943	***	101,705	0.6
All Others	420,453	286,167	251,434	3,994	***	962,048	5.6
Total	10,496,484	5,374,157	1,221,456	125,329	0	17,217,426	100.0

¹ Energy consumption for all agencies, except Universities and Corrections, is based on adjusted average Human Services

FY14 unit energy costs as follows:

Human Services unit costs

Natural Gas \$0.612/therm or \$6.115/10⁶ Btu (1 therm = 100,000 Btu)

Electricity \$0.0817/kwh or \$23.936/10⁶ Btu (1 kwh = 3,413 Btu)

Coal \$44.44/ton or \$2.017/10⁶ Btu (1 lb. = 11,018 Btu)

Oil (#2) \$1.63/gal or \$12.20/10⁶ Btu (1 gal = 138,974 Btu)

³ Corrections Natural Gas \$0.567/therm or \$5.673/10⁶ Btu (1 therm = 100,000 Btu)

⁴ CMS expenditures and energy use contain data from multiple agencies.

² University unit costs:

Universities Unit costs

Natural Gas \$0.539/therm or \$5.4/10⁶ Btu (1 therm = 100,000 Btu)

Electricity \$0.0674/kwh or \$19.76/10⁶ Btu (1 kwh = 3,413 Btu)

Coal \$44.44/ton or \$2.02/10⁶ Btu (1 lb. = 11,190 Btu)

Oil & Propane \$1.63/gal or \$12.20/10⁶ Btu (1 gal = 136,049 Btu)

Steam No steam purchase was reported (1 lb. steam = 1,000 Btu)

➤ **Table A-8**

This table presents the expenditures on energy by the State for the Fiscal Year as reported in the respective Comptroller's Data Warehouse records. The same description and preparation methods as were used in Table 1 apply.

Table A-8

State of Illinois FY13 Building Energy Cost (\$)¹

Agency²	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Energy Cost³	% of Total Building Energy Cost
Universities⁴	35,268,596	41,897,294	***	53,640	***	77,219,531	45.7
Corrections	6,375,240	17,732,116	488,611	41,394	***	24,637,360	14.6
Human Services	2,504,252	6,112,612	1,357,998	24,326	***	9,999,188	5.9
Central Management Services⁵	2,368,943	14,837,686	***	18,224	***	17,224,853	10.2
Transportation	892,993	8,620,184	***	128,652	***	9,641,829	5.7
Secretary of State	1,173,665	9,089,715	371,482	9,001	***	10,643,862	6.3
Illinois Tollway	498,729	3,164,504	***	***	***	3,663,232	2.2
Natural Resources	188,037	2,204,910	***	314,827	***	2,707,774	1.6
Military Affairs	1,138,572	2,239,452	***	123,578	***	3,501,602	2.1
State Police	194,263	1,008,305	***	14,918	***	1,217,487	0.7
All Others⁶	1,895,048	6,238,935	449,628	18,638	***	8,602,249	5.1
Total	\$52,498,337	\$113,145,714	\$2,667,719	\$747,198	\$0	\$169,058,968	100.0

¹ Based on FY13 Comptroller's Data Warehouse records. Natural Gas numbers based on account 1251; Electricity - 1252; Coal - 1341; and Fuel Oil - 1342.

² The agencies in this category expended approximately 1 percent or more of the State's total building energy costs.

³ Gasoline not included.

⁴ Based on FY13 data from Board of Higher Education.

⁵ CMS expenditures and energy use contain data from multiple agencies.

⁶ All remaining state agencies.

Table A-9

State of Illinois FY13 Building Energy Consumption (10⁶ Btu)

➤ Table A-9

This table shows the amounts of energy consumed, in millions of Btus, by the State, for the Fiscal Year, respectively. The same description and preparation methods as were used in generating Table 2 apply.

Agency ¹	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Consumption	% of Total Building Consumption
Universities ²	5,877,606	2,136,859	***	3,258	***	8,017,723	56.4
Corrections ³	1,278,133	619,237	228,995	2,514	***	2,128,879	15.0
Human Services	295,194	213,463	636,446	1,477	***	1,146,580	8.1
Central Management Services ⁴	279,244	518,158	***	1,107	***	798,509	5.6
Transportation	105,264	301,032	***	7,813	***	414,109	2.9
Secretary of State	138,348	317,429	174,101	547	***	630,425	4.4
Illinois Tollway	58,789	110,510	***	***	***	169,299	1.2
Natural Resources	22,165	76,999	***	19,120	***	118,284	0.8
Military Affairs	22,899	35,212	***	10,176	***	68,287	0.5
State Police	19,790	43,182	***	906	***	63,878	0.4
All Others	223,383	217,875	210,725	1,132	***	653,115	4.6
Total	8,320,815	4,589,956	1,250,267	48,050	0	14,209,088	100.0

¹ Energy consumption for all agencies, except Universities and Corrections, is based on adjusted average Human Services

FY13 unit energy costs as follows:

Human Services unit costs

Natural Gas \$0.8483/therm or \$8.483/10⁶ Btu (1 therm = 100,000 Btu)
 Electricity \$0.0977/kwh or \$28.635/10⁶ Btu (1 kwh = 3,413 Btu)
 Coal \$47.019/ton or \$2.134/10⁶ Btu (1 lb. = 11,018 Btu)
 Oil (#2) \$2.29/gal or \$16.47/10⁶ Btu (1 gal = 138,974 Btu)

³ Corrections Natural Gas \$0.499/therm or \$4.988/10⁶ Btu (1 therm = 100,000 Btu)

⁴ CMS expenditures and energy use contain data from multiple agencies.

² University unit costs:

Universities Unit costs

Natural Gas \$0.600/therm or \$6.0/10⁶ Btu (1 therm = 100,000 Btu)
 Electricity \$0.0669/kwh or \$19.61/10⁶ Btu (1 kwh = 3,413 Btu)
 Coal \$72.59/ton or \$3.29/10⁶ Btu (1 lb. = 11,190 Btu)
 Oil & Propane \$2.29/gal or \$16.47/10⁶ Btu (1 gal = 136,049 Btu)
 Steam No steam purchase was reported (1 lb. steam = 1,000 Btu)

➤ **Table A-10**

This table presents the expenditures on energy by the State for the Fiscal Year as reported in the respective Comptroller's Data Warehouse records. The same description and preparation methods as were used in Table 1 apply.

Table A-10

State of Illinois FY12 Building Energy Cost (\$)¹

Agency²	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Energy Cost³	% of Total Building Energy Cost
Universities⁴	42,279,308	42,446,748	4,660,821	77,924	***	89,464,802	45.9
Corrections	7,498,572	19,853,188	591,286	72,262	***	28,015,309	14.4
Human Services	3,532,045	7,787,983	1,692,904	17,876	***	13,030,809	6.7
Central Management Services⁵	2,334,455	19,356,388	***	10,817	***	21,701,660	11.1
Transportation	769,425	8,971,670	***	141,032	***	9,882,127	5.1
Secretary of State	1,180,844	9,598,347	331,526	9,148	***	11,119,865	5.7
Illinois Tollway	530,156	3,600,580	***	0	***	4,130,736	2.1
Natural Resources	158,766	2,530,375	***	349,134	***	3,038,275	1.6
Military Affairs	1,008,685	2,512,564	***	167,556	***	3,688,805	1.9
State Police	167,883	1,236,524	***	17,550	***	1,421,957	0.7
All Others⁶	1,624,410	7,323,060	448,733	21,464	***	9,417,666	4.8
Total	\$61,084,549	\$125,217,427	\$7,725,270	\$884,763	\$0	\$194,912,010	100.0

¹ Based on FY12 Comptroller's Data Warehouse records. Natural Gas numbers based on account 1251; Electricity - 1252; Coal - 1341; and Fuel Oil - 1342.

² The agencies in this category expended approximately 1 percent or more of the State's total building energy costs.

³ Gasoline not included.

⁴ Based on FY12 data from Board of Higher Education.

⁵ CMS expenditures and energy use contain data from multiple agencies.

⁶ All remaining state agencies.

➤ **Table A-11**

This table shows the amounts of energy consumed, in millions of Btus, by the State, for the Fiscal Year, respectively. The same description and preparation methods as were used in generating Table 2 apply.

Table A-11

State of Illinois FY12 Building Energy Consumption (10⁶ Btu)

Agency ¹	Natural Gas	Electricity	Coal	Fuel Oil	Purchased Steam	Total Building Consumption	% of Total Building Consumption
Universities ²	5,389,232	2,044,947	1,414,803	3,579	***	8,852,561	54.8
Corrections ³	1,286,673	693,308	331,734	5,383	***	2,317,098	14.4
Human Services	416,348	271,970	949,782	1,332	***	1,639,432	10.2
Central Management Services ⁴	275,179	675,959	***	806	***	951,944	5.9
Transportation	90,698	313,307	***	10,506	***	414,511	2.6
Secretary of State	139,195	335,191	185,999	681	***	661,066	4.1
Illinois Tollway	62,493	125,739	***	0	***	188,232	1.2
Natural Resources	18,715	88,365	***	26,008	***	133,088	0.8
Military Affairs	118,901	87,743	***	12,482	***	219,126	1.4
State Police	19,790	43,182	***	1,307	***	64,279	0.4
All Others	191,481	255,734	251,756	1,599	***	700,570	4.3
Total	8,008,705	4,935,445	3,134,074	63,683	0	16,141,907	100.0

¹ Energy consumption for all agencies, except Universities and Corrections, is based on adjusted average Human Services

FY12 unit energy costs as follows:

Human Services unit costs

Natural Gas \$0.8483/therm or \$8.483/10⁶ Btu (1 therm = 100,000 Btu)

Electricity \$0.0977/kwh or \$28.635/10⁶ Btu (1 kwh = 3,413 Btu)

Coal \$39.277/ton or \$1.782/10⁶ Btu (1 lb. = 11,018 Btu)

Oil (#2) \$96.59/gal or \$13.42/10⁶ Btu (1 gal = 138,974 Btu)

³ Corrections Natural Gas \$0.5703/therm or \$5.703/10⁶ Btu (1 therm = 100,000 Btu)

⁴ CMS expenditures and energy use contain data from multiple agencies.

² University unit costs:

Universities Unit costs

Natural Gas \$0.785/therm or \$7.8/10⁶ Btu (1 therm = 100,000 Btu)

Electricity \$0.0708/kwh or \$20.75/10⁶ Btu (1 kwh = 3,413 Btu)

Coal \$72.59/ton or \$3.29/10⁶ Btu (1 lb. = 11,190 Btu)

Oil & Propane \$21.78/mmBtu or \$160.05/10⁶ Btu (1 gal = 136,049 Btu)

Steam No steam purchase was reported (1 lb. steam = 1,000 Btu)