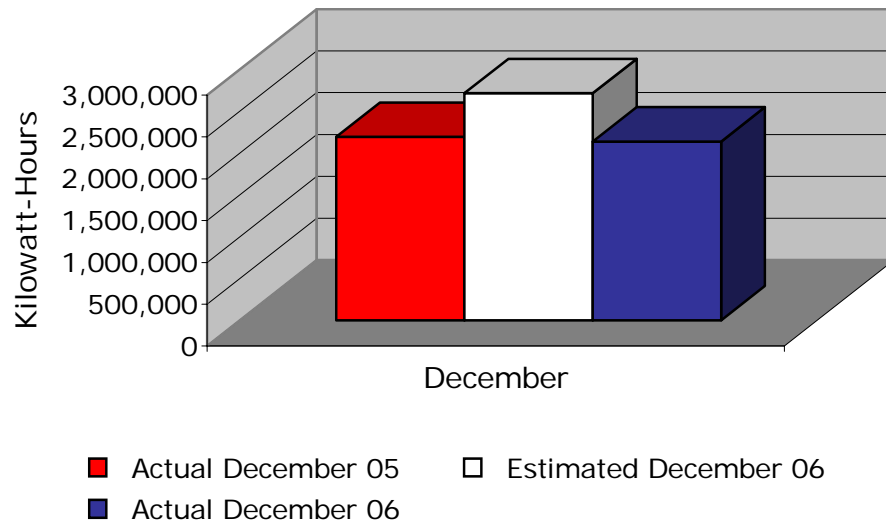


# Energy Report - December, 2006

## Electricity Summary



### Kilowatt-Hours

Actual December 2004	2,797,253
Actual December 2005	2,446,000
Projected for December 2006	2,713,000
Actual December 2006	2,136,000
kWh Over (Under) Expected	-577,000

### \$ Unit Cost

December 2006	\$116,000	\$0.054 per KWH
December 2005	\$140,000	\$0.064 per KWH

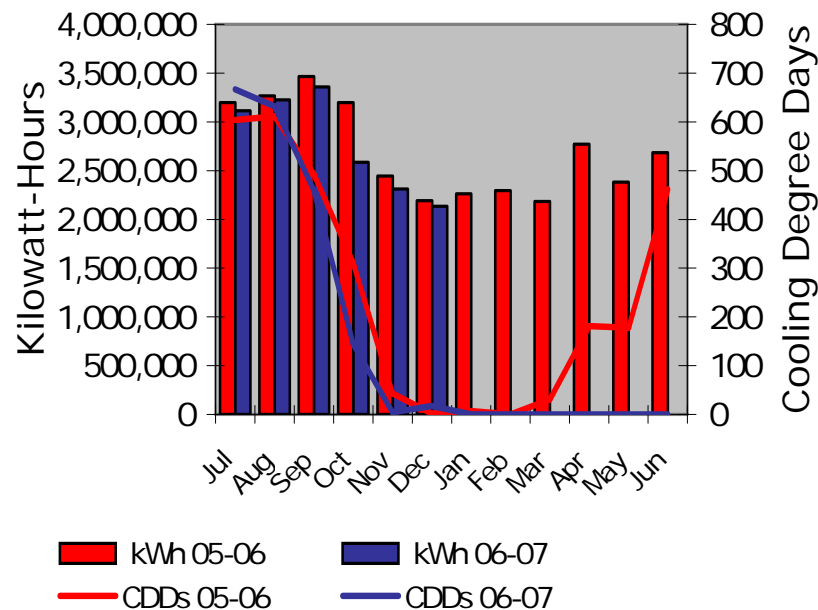
The electric usage for December, 2006 has declined since December, 2005. Weather data indicated that there was a 15 more cold degree days during December, 2006. Any differences are probably related to changes in building occupancy or class schedules.

\*There has been 390,651 addition square footage added to the campus from between 2005 and 2006

\*\*There is no difference in the number of billing days between December, 2005 and December, 2006 billing cycle.

# Energy Report - December, 2006

## Electricity Usage Patterns



### Number of Cold Degree Days

December 2006	17
December 2005	2

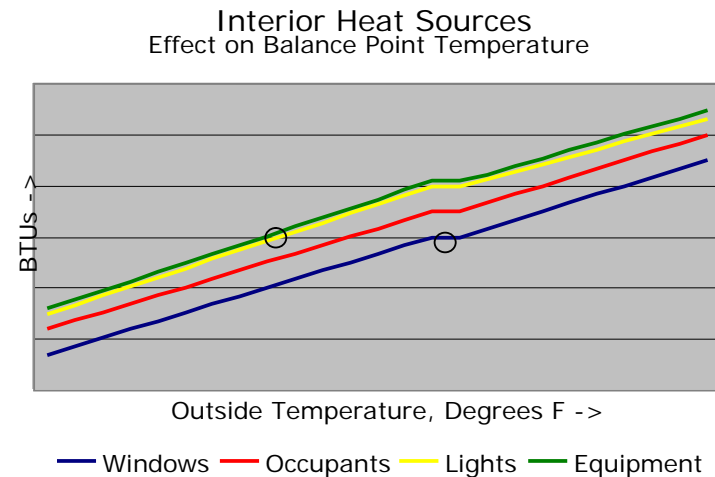
The University's electricity consumption is dependent on weather for many months of the year. Air conditioning and fans represent a major use of electricity, so higher temperatures are likely to result in greater electric usage and higher electric bills.

This graph shows how electric consumption was generally higher for the summer months in fiscal year 2006-2007 than in fiscal year 2005-2006, as shown by evidenced by the greater number of "cooling degree days," or CDDs, in the summer months of fiscal year 2006-2007.

# Energy Report - December, 2006

## Cooling Degree Days (CDDs)

- A cooling degree day is a unit which relates a day's temperatures to that day's energy demands for air conditioning.
- A building's "balance point" is the temperature at which air conditioning is turned on.
- CDDs are calculated by subtracting a building's balance point (UWG's balance point is 60 °F) from a day's average outside temperature. For example, if the day's high is 90°F and the day's low is 70°F, the day's average is 80°F. Eighty minus 60 is 20 CDDs.
- Cooling degree days can be used to compare the current summer to past summers and to "normalize" energy consumption data.
- The greater the internal heat sources, the lower the balance point, that is, the lower the temperature at which air conditioning is turned on. Home air conditioners are typically turned on at outside temperatures of about 70°F. However, classroom buildings have large internal heat sources from lights, electrical equipment such as computers, and people, requiring air conditioning at lower outside temperatures.



# Energy Report - December, 2006

## Adjusting Electric Usage for Comparisons

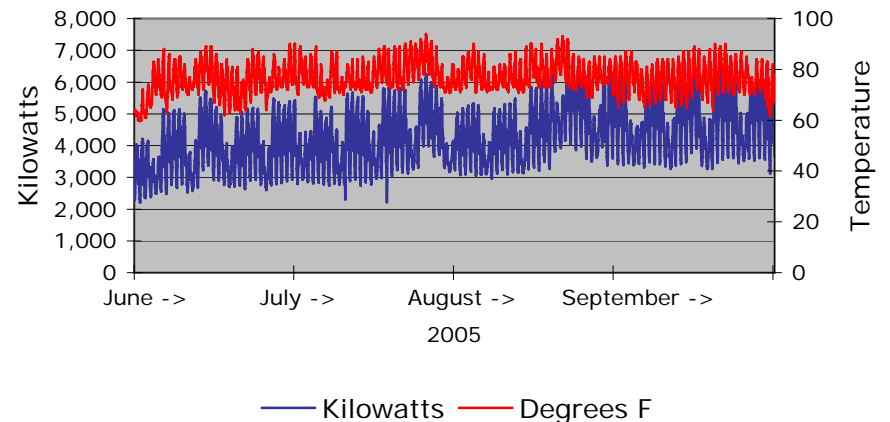
- It is useful to compare electric usage to historical data to determine if energy efficiency measures are being effective and to identify sudden increases in usage
- However, direct comparisons to previous months and years are not adequate because of
  - differences in weather conditions
  - the number of days over which bills are calculated
  - campus expansions which require additional electricity

# Energy Report - December, 2006

## Effect of Weather on Electric Usage

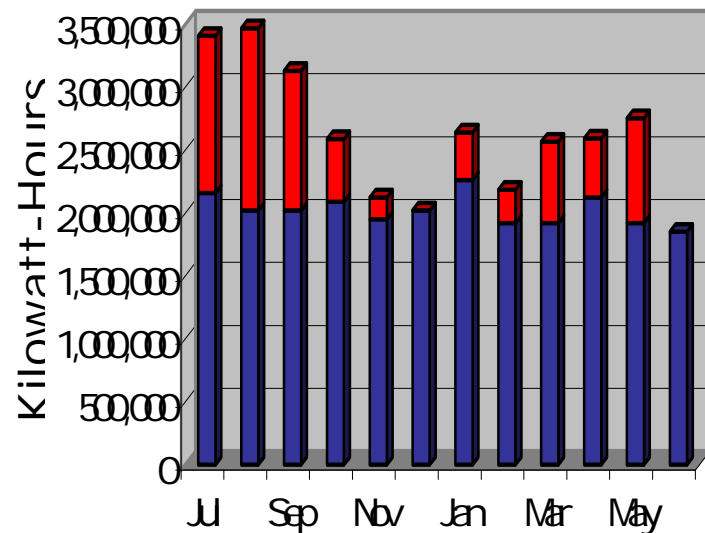
Electricity usage tends to be weather dependent. This graph shows how summer electric demands tend to be higher when temperatures are higher — ignoring the obvious “valleys” which occur on weekends.

Relationship Between Electric Use and Outside Temperature



# Energy Report - December, 2006

## Base Electricity Usage

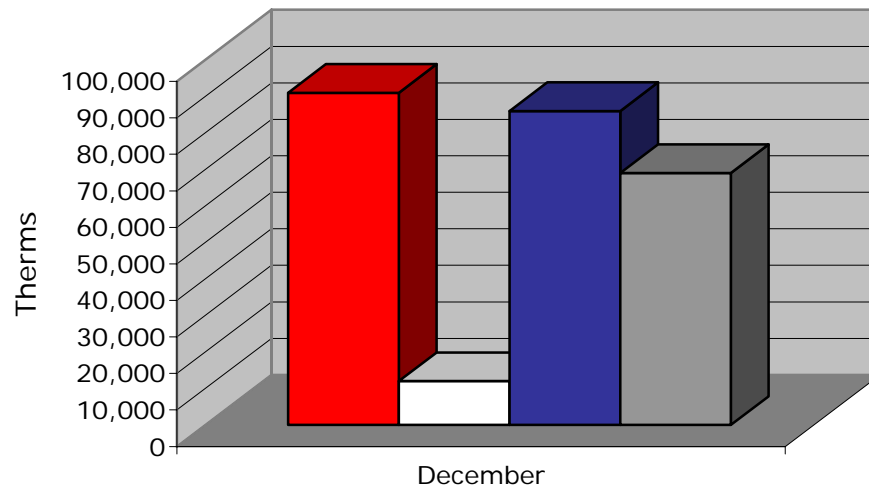


FY05-06

However, there is considerable base usage which is relatively constant, regardless of weather. For the University of West Georgia, this appears to be approximately 2,000,000 kilowatt-hours per month. This graph illustrates the portion of UWG's FY2005-2006 electric usage which appears to be "base", or "background" energy, versus that which is related to cooling — adjusted for the number of days in the bill cycle.

# Energy Report - December, 2006

## Gas Summary



■ FY 03-04 □ FY 04-05 ■ FY 05-06 ■ FY 06-07

	<u>Therms</u>	<u>\$</u>	<u>\$/Therm*</u>
FY 06-07	69,000	\$64,000	\$0.928
FY 05-06	86,000	\$125,000	\$1.453
FY 04-05	12,000	\$12,000	\$1.000
FY 03-04	91,000	\$67,000	\$0.736

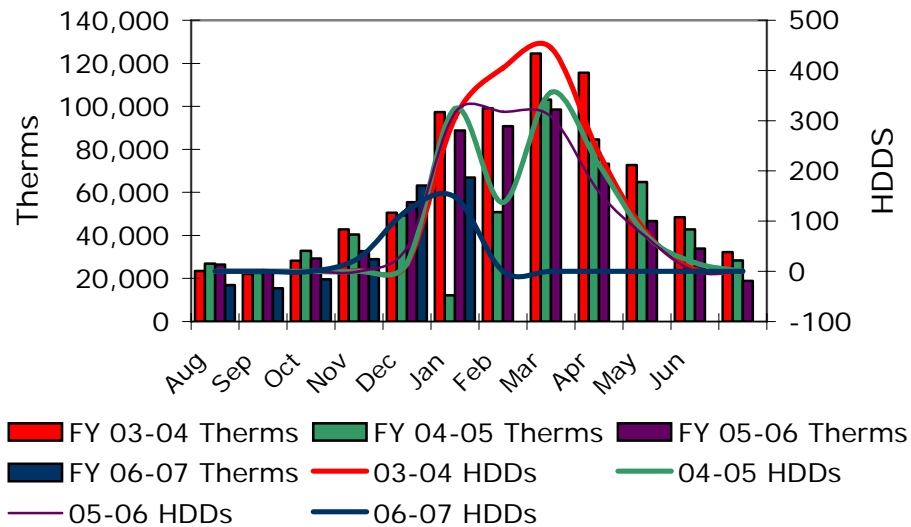
\*Total cost divided into therm usage equals cost per therm.

This graph illustrates how gas usage at the University for November has declined since December 2005 over the last several years. Weather data indicated that there was a 168 fewer heat degree days during December, 2006 compared to December 2005.

\* Gas usage and cost information has been adjusted for number of days in billing cycle and total square footage of campus facilities.

# Energy Report - December, 2006

## Gas Usage Patterns



As with electricity, University of West Georgia's gas consumption is somewhat dependent on weather. While gas has many applications on the campus, such as for water heating, much of the gas used at UWG is for space conditioning.

This graph shows that during the winter months, when outside temperatures are lowest, UWG's consumption of gas is highest.

Similar to cooling degree days, there is also a measure which relates heating requirements to outside temperature. This measure is "heating degree days," or HDDs. The graph also illustrates how months having more HDDs also have higher gas consumption.

# Energy Report - December, 2006

For a variety of reasons, gas usage cannot be estimated using HDDs in the same manner in which CDDs can be used to project electric usage:

- Many months experience zero HDDs
- To maintain proper humidity, air to buildings may require reheating even though air conditioning is being operated, particularly in the spring and fall, thereby increasing gas usage
- Internal heat sources that require additional air conditioning, e.g. lighting and computers, also reduce the amount of heating required

Therefore, even though gas usage tends to increase with lower temperatures, the relationship is not linear, nor is it as stable as the relationship between outside temperature and electricity usage.