

## Understanding Commercial Electric Bills

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### **The more you understand your electric utility bill, the more you can save**

The more you understand your electric utility bill, the better you can manage dollar costs and the associated environmental impacts.

Can you see your energy use information in 15-minute intervals? If you are charged “demand rates,” this feature is particularly important. You pay a significant portion of your bill based on a short period of maximum use during each billing period. Typically, the period is either 15 or 30 minutes.

Managing “peak demand” is often a quick way to save money on energy bills. If you can’t see the pattern of energy use, it is very difficult to manage peak demand.

### **Commercial Electric Utility Bill—the basics**

Every electric utility customer pays for electric energy. Electric energy is measured in kilowatt-hours, abbreviated as kWh.

Often, electricity rates differ in summer and winter. In addition to seasonal changes in rates, some customers are charged for energy based on “time of use.” With time-of-use rates, the customer pays a different rate for energy depending on time of day and day of the week. Late nights and weekends will have a lower energy rate in this scheme.

Many commercial electric utility customers see a charge for “peak” electric power. Power is measured in kilowatts and abbreviated as kW. If present on your electric utility bill, the peak power charge (often called a “demand charge”) usually will be a large part of the bill—20% or more of the total monthly charge!

The electric power portion of your bill is tied to the average maximum power used in any 15-minute interval during the billing period.

Sometimes, there is an additional “historical power charge” (a “ratchet” charge in utility jargon) that stays on the bill for many months. For example, suppose you had a peak average power use of 150 kilowatts from 2:00 to 2:15 pm on August 23. You may see a charge for that 15-minute peak for as long as 12 months if in all subsequent months, you never used more than that power in any 15-minute period.

Utilities charge for peak power because they have to invest in capacity to be ready to provide customers with the peak amount of power needed at any particular time. The utilities are trying to give you a price signal to manage your demand intelligently. Unfortunately, most customers can’t interpret the price signal because they can’t see their use pattern over time.

### **How can you navigate through all this complexity?**

The first step in understanding your commercial electric bill: know the rate charged by your utility and determine if the rate is appropriate to your business.

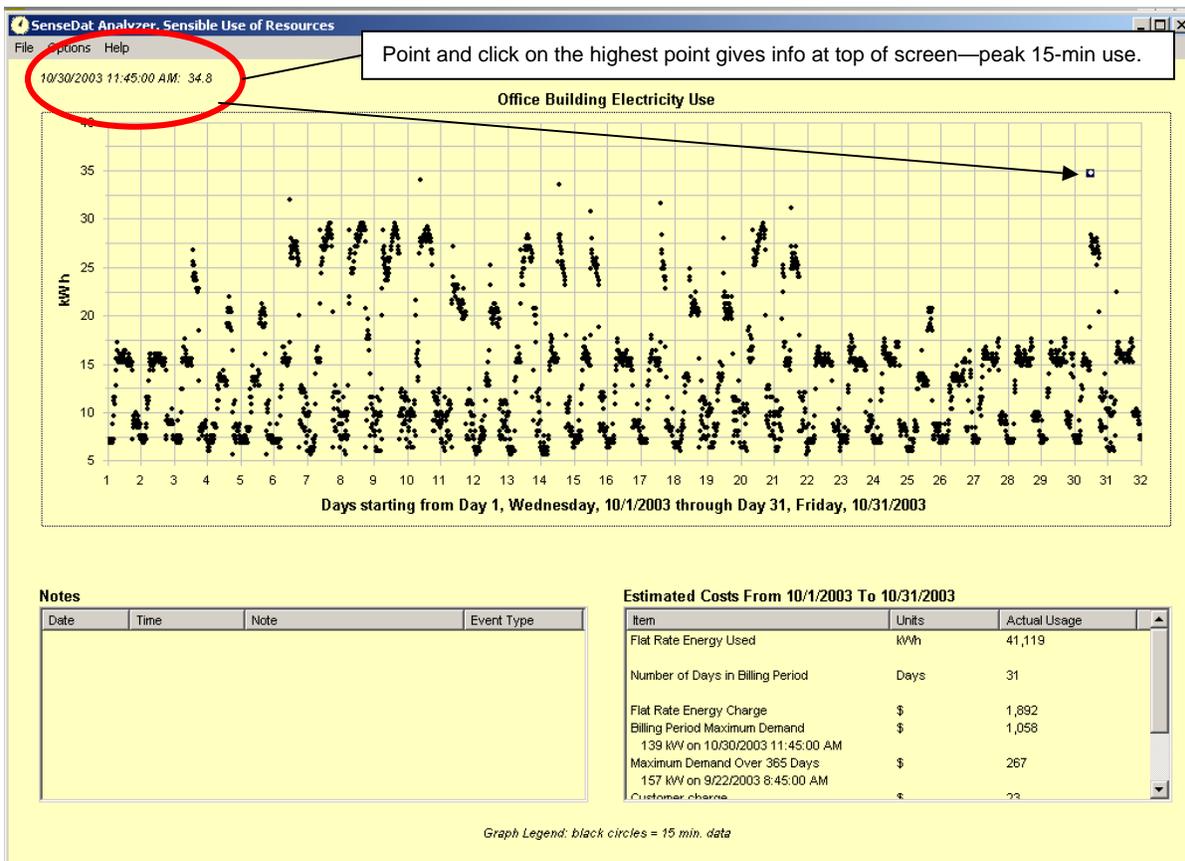
The second step is to see and understand the patterns in your electricity use.

There are a range of commercial products, web-enabled, that will help you gather energy data and display it in tables and graphs.

**A Generic Commercial Electric Utility Bill and a simple display**

A simplified generic commercial electric bill that has a peak demand charge looks like this:

<b>Account</b> 123-456ABC	<i>Payment due 30 Nov 03</i>	
Billing Period	1 October 03 to 31 October 03	
Meter 485679434		
1. Energy charge	41119 kWh x \$0.04602/kWh	\$1892.30
2. Current Month Peak demand charge	139.2 kW x \$7.60/kW	\$1057.92
3. Historical Peak demand charge	156.8 kW x \$1.70/kW	\$ 266.56
4. Connection charge	31 days x \$0.7397/day	\$ 22.50
<b>Total Amount Due</b>		<b>\$3239.28</b>
Your Historical Month Peak Demand occurred in Sep 2003		



The screen shows a PC-based program we developed several years ago that captures the bill information on the main screen. Much of the functionality in the display above can be generated in a spreadsheet or may be available in specialized utility bill information systems.

Generic Component	Example	Notes
<b>Period</b>	1 October 03 to 31 October 03	Unless your utility has an automated meter reading system, the period typically does not run midnight to midnight. A meter reading may occur any time during the days at the ends of the period range. To simplify the example, we ignored this detail.
<b>Energy charge</b>	41119 kWh x \$0.04602/kWh	Total energy use, charged at 4.602 cents per kWh, which is an example of a "flat rate" for energy. If your rate is based on "time of use," there typically will be an "on-peak" energy charge and an "off-peak" energy charge.
<b>Period Demand Charge</b>	139.2 kW x \$7.60/kW	This charge means that sometime during the present period, you had 139.2 kW of power demanded of the grid during a quarter hour. Each kW in this example costs \$7.60. If you could have reduced demand from 139 to 129 kW, you would have saved \$76.00
<b>Historical Peak Demand</b>	157 kW x \$1.80/kW	This charge means that sometime in the past you had 157 kW of power demanded of the grid during a quarter hour. Often this legacy charge has a look-back of 12 months. Each billing period, the utility looks back 12 months and finds the peak demand during a quarter hour and assesses a charge.
<b>Hook-up charge</b>	31 days x \$0.7397 per day	Fee for being connected, sometimes just a flat dollar amount assessed per month.

**Technical Note: relating average kW to kWh in 15 minutes period.**

If you have 100 kilowatts of power demanded from the grid for a 1/4 hour period, this is 100 kilowatts x 1/4 hour = 25 kilowatt-hours (kWh) of energy used in that quarter hour. On the other hand, if we know that the energy used in a particular quarter hour is 25 kWh, we can work backwards to get 25 kWh/(1/4 hour) = 100 kW average demand in that particular quarter hour.

**Tracking other resources**

There's nothing special about electric energy use, aside from the billing charge for peak demand. The same principles apply for monitoring water or natural gas use.

**Questions?**

Contact Kevin Little, Ph.D., [klittle@iecodesign.com](mailto:klittle@iecodesign.com) 608.251.4355, we're happy to speak with you!