



# CENTRAL HUDSON ENERGY MANAGER

## VERSION 3.0 USER'S GUIDE

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## INTRODUCTION

### INTRODUCING CENTRAL HUDSON ENERGY MANAGER 3.0 PRODUCTS

Central Hudson Energy Manager 3.0 provides a full range of products and services enabling commercial and industrial (C&I) enterprises to reduce cost and maximize energy reliability. Central Hudson provides the products and services needed to gain a thorough understanding of energy data and energy consumption patterns. Energy Manager provides the ability to use that information to develop and implement optimal energy management strategies for energy procurement and use.

Central Hudson Energy Manager is differentiated by extensive client service capabilities that include integration support for fast, successful implementation; 24x7 account monitoring and support from experts located in the Enerwise Global Technologies, Inc. Information Command Center (ICC).

**Central Hudson Energy Manager, Version 3.0 proprietary system** collects and displays your site energy usage information on a personalized web site. The system provides reporting of usage outside of established parameters as well as advanced evaluation tools. Knowledge of this critical information helps you make strategic, informed decisions that will increase system reliability, select areas for efficiency improvements, and identify areas to save money.

#### ***BENEFITS TO YOUR BUSINESS***

- ❑ Optimize your energy consumption decisions with actionable data
- ❑ Enable your internal energy management staff to make informed decisions
- ❑ View and analyze your energy use for any single site or facility grouping you choose
- ❑ Gain information to shop for market-priced electricity on an hourly basis
- ❑ Monitor consumption for excess usage
- ❑ Alarm features to notification of excess use or power outages

### USING ENERGY MANAGER 3.0 PRODUCTS

Central Hudson Energy Manager 3.0 products are available for use 24 hours a day, seven days a week. The tools are available using standard Internet browser technology (requirements defined in the next subsection) at the web address provided to you with your subscription start-up.

No limits are placed on how often you can use the Central Hudson Energy Manager service. A key determinant of your use will be the frequency of data collection from the metered sites. The Central Hudson Energy Manager system is designed to provide information updates daily containing 15-minute interval data.

Each client may have one or more user names and passwords for accessing the Energy Manager tools. If you forget a user name or password, you can contact your assigned Help Desk for assistance.



## BROWSER REQUIREMENTS

Using standard browser technologies, Energy Manager products are easy to use and require no special set-up. For certain tools that use Java technology, you must have an Internet browser meeting the minimum requirements that follow. If you need special assistance with the tools, please contact your help desk as indicated in your subscription information.

- ❑ Netscape—Version 4.77 or higher, with Java enabled
- ❑ Microsoft Internet Explorer—Version 5.0 or higher, with Java enabled



## GETTING STARTED

### LOGGING ON

To log on to the system type the following in your browser window:

<http://cenhud.enerwise.com>

Username:

Password:

Then click "Login".

Your username and password will be provided by Central Hudson.



# HELP

## USING THE HELP SYSTEM

The on-line site provides basic information complementing this User's Guide. Click on the **Help** link on your screen to access our help index. Help topics are listed in the index.

The screenshot shows the 'Welcome to Energy Manager' page. On the left is a vertical navigation menu with the following items: Control Panel, Bulletin Board, News & Weather, Usage Reports, Exceptions, Hourly Data, Alarms, Cost Estimation, Preferences, Help (highlighted), Administration, Welcome!, and Central Hudson Demo. The main content area features the Central Hudson Gas & Electric Corporation logo at the top right. Below the header, the text reads 'Energy Manager' and provides an overview of the system's capabilities. It lists several help topics with brief descriptions and links: Bulletin Board, News and Weather, Usage Reports, Exceptions, Hourly Data, Distributed Generation, Cost Estimation, Power Quality, Preferences, and Administration. At the bottom, there is a 'Glossary' and 'Browser Information' link, along with the Enerwise logo and patent information.

Click a topic to view more information about performing a task.

## CONTACTING USER ASSISTANCE

Each user has a first-level contact for gaining more information about and assistance with Central Hudson Energy Manager products.

Please refer to your subscription start-up information for the number you should call. If you are uncertain, call Enerwise Global Technologies, Inc. - Information Command Center directly at (866) 925-0408 and ask for the Help Desk. We will advise you of your subscription arrangements and the next step for answering your questions.





## BULLETIN BOARD/WELCOME PAGE

After you log in through the secure web page, the Welcome Page/Bulletin Board serves as your entry point into the Energy Manger 3.0 platform. The Bulletin Board serves as a basis of communication for customized energy reports. The Welcome Page also contains a control panel through which you access your metered information.

Access to your information is gained through the control panel, found on the left side of the page. The main categories listed are:

- Usage Reports**  
Provides energy consumption and demand information for determining energy use patterns and strategies. Information is provided for individual or multiple sites.
- Exceptions**  
Quickly identifies consumption that exceeds established limits.
- Hourly Data**  
Provides a closer look at daily usage and demand. Hourly data provides the user alternative reports not based on exceptions.
- Alarms**  
Provides an active tool to monitor operations against customer defined parameters.
- Cost Estimation**  
Calculate energy bills and perform "what-if" scenarios to determine cost impact of operational or tariff changes.

The more general categories include:

- Bulletin Board**  
Receive news and important messages from Central Hudson Gas & Electric regarding your account here.



- ❑ News & Weather  
Customers can customize this page for general and industry news links. Check weather conditions based on zip code.
- ❑ Preferences  
Registered customers can select news by topic, add custom links, and set their passwords here.
- ❑ Help  
Help topics are listed in the page index. Click a topic to view more information about performing a task.
- ❑ Administration  
Allows authorized users to create new customers and sites online, as well as use various diagnostics.



## NEWS AND WEATHER

The News and Weather feature of Central Hudson Energy Manager 3.0 provides the following:

- Weather**  
Check weather conditions based on zip code.
- Customized Links**  
Users can customize the list of news links.

### WEATHER

To view weather information in a specific area just enter your zip code and press GO. This will link to CNN.com weather information.

### CUSTOMIZED LINKS

Customize your News and Weather page by adding or removing links in the form provided on this screen. Put a check in the box of each link you wish to keep. Uncheck each one you wish to remove. When you have finished, click on Save to update your preferences. A message will appear at the top of the page, "Your user links have been saved."

Click back on News & Weather on left to see the new links added under the customized links section.



## USAGE REPORTS

The following information tools are located under **Usage Reports**:

- Usage Curves**  
Generate graphs and tables of usage for the period of time identified.
- Compare Usage**  
Compare usage for multiple sites by varying date ranges. Compare the same site for different periods of time. Overlay the sites' data for easy comparison.
- Demand Profile**  
Generate report reflecting a single site's peak demand on a day-by-day basis, over selected time range, or the aggregate demand for all sites.
- Load Duration Curves**  
Analyze percentage of time a site's load is at or above a given level.

## USAGE CURVES

Utility bills do not provide the level of detailed consumption facility managers need to regulate usage patterns. Through the use of the Usage Curve tool, facility managers can easily identify time of peak usage and match that against facility operating characteristics.

The Usage Curves tool offers fundamental views of electricity consumption for each metered location. Raw meter data is converted into graphics and tables, enabling you to view consumption patterns.

Using this tool involves two basic processes: specifying the scope and format of the viewable report, and interacting with the report itself.

- Specify the display scope and format**  
On the first screen for Usage Curves, you configure your on-screen report from three sections. To facilitate completion of this page, Energy Manager 3.0 remembers your last configuration.
- Select a date**  
Click on your selections (see Appendix A if you need help selecting dates).
- Select your channels/sites**  
Your channels are your various data unit sources from metered or sub-metered sites monitored by Central Hudson. All of your configured channels display on the screen with their available date ranges for data.
- Select the site(s)**  
Select the data unit channels to view. Omit a site from your display by leaving all channels unchecked. The data units may vary for each metered location. The possibilities are kW, kWh, kVAR, kVARh, power factor, natural gas (Mcf), price (\$), and temperature.

Select your  
channel(s)

### Choose your channels

Agriculture Production [Hourly V] 01-Feb-1997 to 07-Aug-2001

kWhr  kW  kVarh  kVar



❑ **Configuring your display format**

The Usage Curves tool supports multiple formats for viewing your electricity consumption, such as those illustrated in the following screen.

**3** **Decide how you want to see it** *Configuration options*

Create a:

Summarized by:

Time Zone:

Graph Size:

Graph Options:

- White Background
- Grid Lines

See energy per unit\* (i.e., kWh per widget) for time period selected

Enter Unit Name:

Enter Unit Amount:

\* Only kWh and/or kVarh will display this feature.

Include zero in Summary calculation

These options appear with static graph and data table

To configure the display format:

1. Select a data display type from the first drop-down list.

Interactive Graph

Interactive Graph

Static Graph

Text Export File

Table

Excel97

*Display types available; see the following section for details*

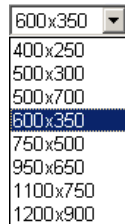


2. Select the data summarization unit



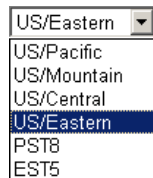
*Summarization units available;  
This selection must coordinate with  
your date range selection (e.g., you  
wouldn't select monthly for a  
two-day report)*

3. Select a screen resolution (applies only to static graphs).



*Resolutions  
available*

4. Select a time zone for the time axis (applies only to Static and Interactive Graphs).



*Time zones  
available*

- 5. Select graph options for white background and gridlines (applies only to Static Graphs).
- 6. Type a Unit Name and Unit Amount for viewing energy per unit (applies only to displays of kWh and kVARh with static graph and table formats). Your selection is placed in the column header. Total site usage is divided by the unit amount to determine energy per unit. This works well for customers with sub-metered production lines.
- 7. Click Generate to view your configured display.

❑ **View your data display**

Each display type presents your data differently and offers you unique capabilities. Each type is discussed below.

• **Interactive Graphs**

The interactive graph uses Java technology to generate an interactive display with powerful features (browser requirements are identified in the introduction to this manual). Three separate Java windows are available.

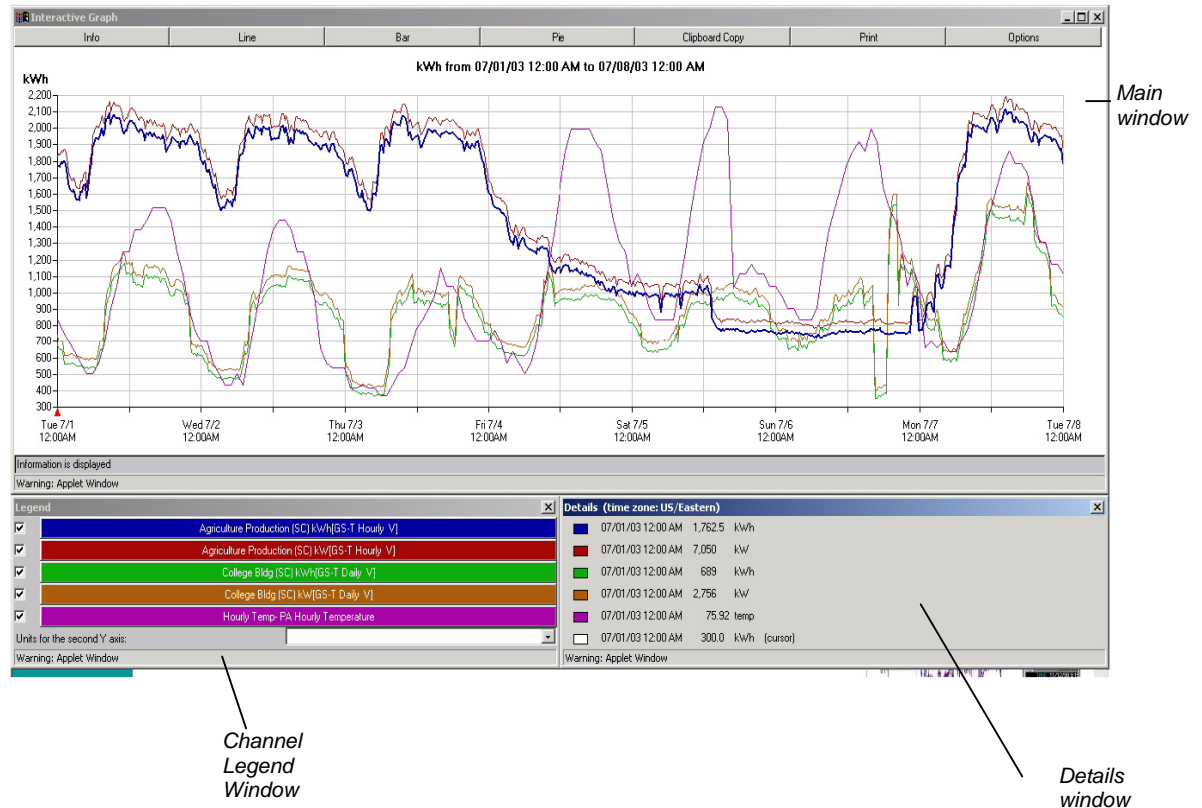
- The main window displays the graph itself. As the cursor passes over the main window, a red arrow appears along the x-axis, indicating position. Closing this window closes all three windows.
- The channel legend window. Click a channel bar to highlight the channel data in the main window and set the y-axis units based on the channel data unit. Un-checking a channel will remove that channel line from the graph. The drop down entitled 'Channel for the second Y-axis provides the user with Units of Measure which, when selected, display on the right hand Y-axis.



- The details window. Move the cursor over the graph and view detailed data points for each data unit.

As the Java interactive graph loads, you will first see an information page about the interactive graph. If you have problems using the Java interactive graph, read over the frequently asked questions on the information page.

The default view for the interactive graph displays like the figure below. The Line display is shown. You can move and resize the three windows as you wish. Close the interactive graph by closing the main graph window.



**Select and highlight a channel**

Select and highlight a channel by clicking on a colored channel bar in the channel legend window. With line graphs, the selection will appear highlighted in the graph. The y-axis will adjust to the appropriate data unit (e.g., kW).

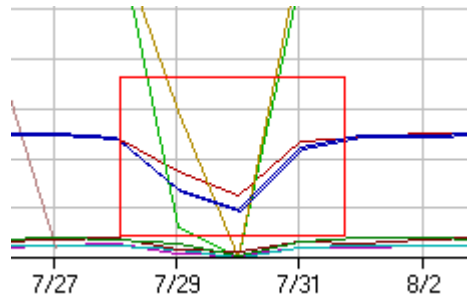
To help read multiple channels with different data units, you can select a second channel and data unit for the right y-axis.

**Zoom in and out on the line graph**

With line graphs you can click-drag within the graph to select any data area for zooming in. To restore the graph to the default view, right-click your mouse, while positioned on the graph. The detail of the data points for any view will depend on the summarization unit (e.g., monthly, daily, hourly) you selected when configuring the graph. With more data points, the zoom feature becomes more useful.



Select an area to zoom in on data



**View data details for line graphs**

The details window with line graphs presents the time and values for kW, kWh, kVAR, and kVARh for the cursor's location in the graph. Move your cursor within the line graph of the main window and watch the details adjust to your location.

**Other data views in the main window**

The main window's toolbar includes additional controls for viewing and processing your data. The default view is Line for line graphs. The other options are Info, Bar, Pie, Print, and Clipboard Copy and Options.

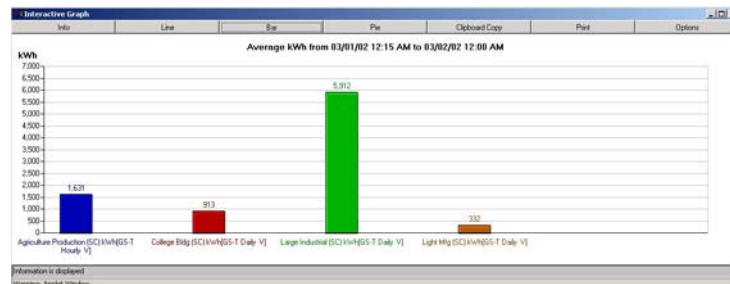
— **Info**

The info button presents a text display of summary information for each channel in the interactive graph. You can copy this text and paste into any other application.

Info	Line	Bar
You have loaded 6 data channels:		
College Bldg kWh[CON MD LGSS Daily V]		
Data Begins: Tue Jul 10 03:00:00 EDT 2001		
Data Ends: Thu Aug 09 03:00:00 EDT 2001		
Total Hours: 720		
Total kWh: 527835		
Average kWh: 17026.936		
College Bldg kW[CON MD LGSS Daily V]		
Data Begins: Tue Jul 10 03:00:00 EDT 2001		
Data Ends: Thu Aug 09 03:00:00 EDT 2001		
Total Hours: 720		
Min kW: 307		
Max kW: 1138		
Lrg Indstrl kWh[CON MD GSP Daily V]		
Data Begins: Tue Jul 10 03:00:00 EDT 2001		
Data Ends: Fri Jul 27 03:00:00 EDT 2001		
Total Hours: 408		
Total kWh: 7963253		

Info display

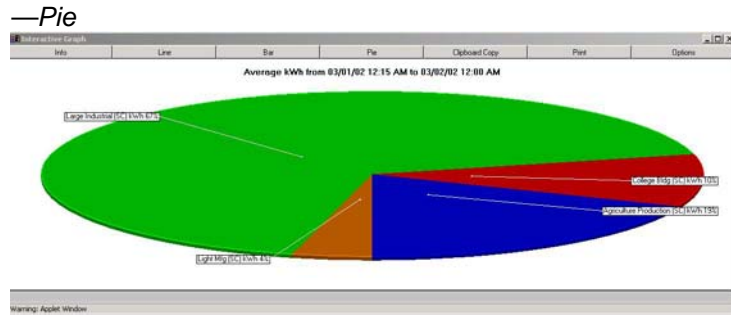
— **Bar**



The bar chart feature displays comparison charts for your selected channels. All channels with the same data unit will display when you click a channel legend button. For example, the figure below shows all kWh channels when you select any kWh channel from the legend window. With bar charts the details window becomes a control for selecting the data point you wish to chart. The default selection is "Average." Other options are shown below.







The pie chart feature displays all channel data of the some data unit as a pie chart, revealing the comparative ratios of the various channels. The example below shows the share of KWh for all sites. With pie charts the details window becomes a control for selecting the data point you wish to chart. The default selection is "Average." Other options are shown below.

—Print

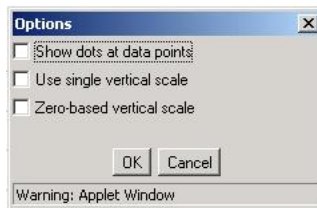
The print feature allows you to print the contents of the main display window.

—Clipboard Copy

The clipboard feature copies all data points generated for the display to your computer's clipboard for pasting into another application. The volume of data will depend on the number of channels, the date range, and the summarization unit (e.g., daily).

(Note: You can also copy the screen image of the main window. Click inside the main window to make it active, then press ALT+PrtScn to copy the screen image to your clipboard. You can paste the image into most graphics applications.)

— Options



The options apply to the line graph.

Show dots at data points results in a graph as displayed:





Use Single vertical scale scales all lines to a single scale.

Zero based vertical scale starts the Y-axis at zero.

*Closing the interactive graph*

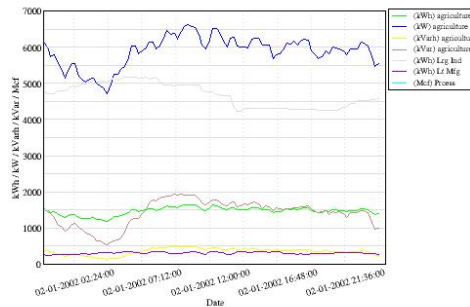
Close the main display window to close all three Java display windows. Your browser window with the information page will become the active window, unless you had switched to another application while viewing the Java display.

• **Static Graphs**

The static graph display presents a non-interactive graph image of the data view you configure. As noted earlier, you have control over the image size in pixels, the background color, and gridlines. The following example shows a white background with gridlines. Print or save this graph, as you would print any standard web page or graphic. Following the graph is a table view of summary data.

**Static Graph for Sample Company**  
02/01/2002 00:15:00 through 02/02/2002 00:00:00

Static graph display



**Summary**

Channel	Min Value	Min Occurred At	Max Value	Max Occurred At	Sum	Average	Usage per
agriculture kWh	1,179.25	February 1, 2002 04:45:00	1,652.50	February 1, 2002 10:30:00	141,226.50	1,471.11	
Lrg Ind kWh	4,224.00	February 1, 2002 14:15:00	5,164.75	February 1, 2002 06:00:00	449,174.25	4,678.90	
Lt Mfg kWh	240.50	February 1, 2002 00:45:00	354.50	February 1, 2002 16:45:00	29,736.75	309.76	
agriculture kW	4,717.00	February 1, 2002 04:45:00	6,610.00	February 1, 2002 10:30:00		5,884.44	
agriculture kVarh	131.75	February 1, 2002 04:45:00	486.00	February 1, 2002 10:00:00	34,003.25	354.20	
agriculture kVar	527.00	February 1, 2002 04:45:00	1,944.00	February 1, 2002 10:00:00		1,416.80	
Process MCF	3.00	February 1, 2002 00:15:00	7.00	February 1, 2002 09:45:00		3.05	

\*Min Value Excludes Zeros

Summary —  
text data  
with static  
graph  
display

**Average Power Factor\***

Site Label	Power Factor
agriculture	0.97

\*Only those sites with both kW and kVar or kWh and kVarh selected can display power factor.

**Load Factor\*\***

Site Label	Load Factor
agriculture	88.98%
Lrg Ind	90.57%
Lt Mfg	87.49%

\*\*Only those sites with either kW or kWh selected can display load factor.

- Text Export Files**

The text export option, illustrated below, displays the raw data with comma delimiters. You can print this screen or save the data for importing into a program such as Microsoft Excel. The volume of data will depend on the number of channels, the date range, and the summarization unit (e.g., daily).

```
Time,Execs,Agriculture Production kWh(CM DE GSP Hourly V),College Bldg kWh
09-JUL-2001 24:00:00,994723159,105885,13783.25,291067.25,18453
10-JUL-2001 24:00:00,994809599,177033.25,21241.25,477118.75,28148.25
11-JUL-2001 24:00:00,994805599,172298,21912.25,480769.5,30617.5
12-JUL-2001 24:00:00,994982399,173398.5,22328.5,464880.75,32497
13-JUL-2001 24:00:00,995068799,170508,22665.5,500382.25,33265.75
14-JUL-2001 24:00:00,995155199,104137.5,11226.25,508891.5,17318
15-JUL-2001 24:00:00,995241599,82648.25,7276.75,504001.75,11955.75
16-JUL-2001 24:00:00,995327999,163679.75,19931.5,505573.5,27324.25
17-JUL-2001 24:00:00,995414399,172722.25,22301.25,514512.25,30958.75
18-JUL-2001 24:00:00,995500799,169824.5,21046.75,520325.5,28097
19-JUL-2001 24:00:00,995587199,166702.75,20390.5,533097.75,28168.5
20-JUL-2001 24:00:00,995673599,168349.75,21189.75,541497.5,29716.25
21-JUL-2001 24:00:00,995759999,101391.25,9001.552221.25,14351.5
22-JUL-2001 24:00:00,995846399,78524.25,8259.5,485884.25,13375.5
23-JUL-2001 24:00:00,995932799,161608.25,21300.5,365471,29784.25
24-JUL-2001 24:00:00,996019199,177923,18590.25,334724.25,25579.25
25-JUL-2001 24:00:00,996105599,176861.25,19233.25,298987.25,25311
26-JUL-2001 24:00:00,996191999,176242.25,20961,16867,28128
27-JUL-2001 24:00:00,996278399,169059,12336.25,0,30979.25
28-JUL-2001 24:00:00,996364799,97455,10561.5,0,15291.25
29-JUL-2001 24:00:00,996451199,70350.5,6737.25,0,11278.5
30-JUL-2001 24:00:00,996537599,155040.5,10920.25,0,26410.25
31-JUL-2001 24:00:00,996623999,172273.75,17864.75,0,24318.5
01-AUG-2001 24:00:00,996710399,173228.25,21721.75,0,29479.75
02-AUG-2001 24:00:00,996796799,175932.25,21992.75,0,31136.5
```

Text export file display with  
comma-delimited data

- Table Format**

The table format uses a Java window to present the raw data for your display configuration. The data is the same as displayed previously in the text export file format. With the Java window you have on-line interactive controls for viewing the data. You can sort the data by any column by clicking on the column header. The default sort is in ascending order; click again to toggle the sort to descending order. You also can change the column width and row height within the window. As with the static graph previously displayed, a summary data table is included below the Java table.



Time	ON MD LGSS Daily V	Lrg Indstrl kWh[CON MD GSP Daily V]	Lt Mfg kWh[CON DE GSP Daily V]
2001-07-10 24:00:00	341.25	477,118.75	28,148.25
2001-07-11 24:00:00	312.25	480,769.5	30,617.5
2001-07-12 24:00:00	328.5	464,880.75	32,497
2001-07-13 24:00:00	665.5	509,982.25	33,265.75
2001-07-14 24:00:00	526.25	508,091.5	17,318
2001-07-15 24:00:00	76.75	504,081.75	11,855.75
2001-07-16 24:00:00	931.5	505,573.5	27,324.25
2001-07-17 24:00:00	381.25	514,512.25	30,858.75
2001-07-18 24:00:00	346.75	520,325.5	28,097
2001-07-19 24:00:00	290.5	533,097.75	28,168.5
2001-07-20 24:00:00	59.75	541,497.5	29,716.25
2001-07-21 24:00:00	081	552,221.25	14,351.5
2001-07-22 24:00:00	299.5	485,884.25	13,375.5
2001-07-23 24:00:00	300.5	365,471	29,784.25
2001-07-24 24:00:00	380.25	334,724.25	25,579.25
2001-07-25 24:00:00	233.25	298,987.25	25,311
2001-07-26 24:00:00	1,961	16,867	28,125
2001-07-27 24:00:00	336.25	0	30,973.25
2001-07-28 24:00:00	861.5	0	15,281.25
2001-07-29 24:00:00	27.25	0	11,278.5
2001-07-30 24:00:00	320.25	0	26,418.25
2001-07-31 24:00:00	364.75	0	24,318.5
2001-08-01 24:00:00	221.75	0	29,479.75
2001-08-02 24:00:00	332.75	0	31,136.5

Sort view with column headers

Table format in Java window

• **Microsoft Excel Format**

The Excel option displays the raw data as an Excel file. You need to have Excel installed on your machine to view the data. If not, a free Excel viewer is available on the configuration page. With Excel installed, the display should automatically launch Excel and display your data.

The volume of data will depend on the number of channels, the date range, and the summarization unit (e.g., daily).

You can then manipulate and save your data within Excel.

Excel display format

	A	B	C	D	E	F
1	Time	Agriculture Production kWh	College Bldg kWh	Lrg Indstrl kWh	Lt Mfg kWh	CON DE
2	37082	104062	13547.25	285830.5	18159.5	
3	37083	177033.25	21241.25	477118.75	28148.25	
4	37084	172298	21912.25	460769.5	30617.5	
5	37085	173398.5	22328.5	464880.75	32497	
6	37086	170508	22665.5	509382.25	33265.75	
7	37087	104137.5	11226.25	508891.5	17318	
8	37088	82648.25	7276.75	504081.75	11855.75	
9	37089	163679.75	19931.5	505573.5	27324.25	
10	37090	172722.25	22381.25	514512.25	30858.75	
11	37091	169824.5	21046.75	520325.5	28097	
12	37092	166702.75	20390.5	533097.75	28168.5	
13	37093	168349.75	21159.75	541497.5	29716.25	
14	37094	101931.25	9081	552221.25	14351.5	
15	37095	78524.25	8299.5	485884.25	13375.5	
16	37096	161605.25	21300.5	365471	29784.25	
17	37097	177923	18590.25	334724.25	25579.25	
18	37098	176861.25	19233.25	298987.25	25311	
19	37099	176242.25	20961	16867	28125	
20	37100	169059	22336.25	0	30973.25	

**COMPARE LOADS**

The load comparison tool allows you to select unique date ranges for each of your metered channels. You then configure your report, and the system overlays the data from up to five sites for easy comparison. Compare Loads allows the user to evaluate consumption of various sites over similar periods of time. If the operating characteristics of the facilities are similar, variations in load curves suggest areas for further analysis. You can also compare data from different date ranges for the same site.

**Specify the display scope and format**

On the configuration screen of the Compare Loads tool you specify the date range for any or all of your metered channels and select the display format options. Energy Manager 3.0 remembers your configuration of this screen for the next time you use Compare Loads.

**Select sites to compare**



Select Sites to Compare

- First select a date range type from the drop-down list. The screen will adjust for each available channel based on your selection.
- Select any combination of sites using the drop-down list in each site section. Each available site is a metered channel and data unit combination. You can designate up to five different sites for the report.
- Specify a date range for each site, based on the date type you selected in Step 1 (assistance with the calendar function is provided in Appendix A).
- Type a label for each site. The labels become the names of the legend window with interactive graphs.

❑ **Select options**

The options section lets you select the display format for the comparison. This section includes the options in the following figure.

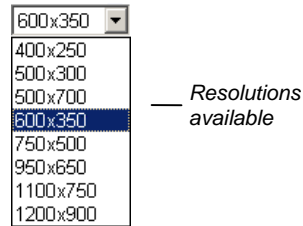
❑ To configure the display options:

1. Select a data display type from the first drop-down list.

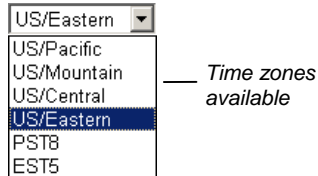
2. Select the data summarization unit.



3. Select a screen resolution (applies only to static graphs).



4. Select a time zone for the time axis (applies only to static and interactive graphs).



5. Enable calendar-day alignment by selecting the “Sunday” checkbox. If one date range begins on Monday and another on Thursday, this option will align the calendar days together—Mondays with Mondays.
6. Select graph options for white background and gridlines (applies only to Static Graph types).
7. Click Generate to view your configured display.

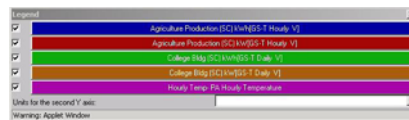
**View your data display**

The features of each display format for the Compare Loads tool are virtually identical to those of the Load Curve tool. Please see View Your Data Display for Load Curves for specific common instructions. Special comments for each display format follow below.

- **Interactive Graphs**

The interactive graph uses Java technology to generate an interactive display with powerful features. The only minor variance for the interactive graph display for Load Compare is the use of the label values from the configuration screen in the legend window of the Java application. In the figure below we see the values “Agriculture Production” and “College Building” in the legend window controls. You saw the same labels entered previously in Select Sites to Compare.

Legend window with labeling



- **Static Graphs**

The static graph display presents a non-interactive graph image of the data view you configure. You have control over the image size in pixels, the background color, and gridlines. Print or save this graph, as you would print any standard web page or graphic. A summary data table is also included and is virtually identical to the static display example under Load Curves.

As with the interactive graph, the static graph uses the labels entered on the configuration screen to build a legend for the graph.

- **Text Export Files**

The text export option displays the raw data with comma delimiters. You can print this screen or save the data for importing into a program such as Microsoft Excel. The volume of data will depend on the number of channels, the date range, and the summarization unit (e.g., daily).



- **Tables**

The table format uses a Java window to present the raw data for your display configuration. The data is the same as displayed above in the text export file format. With the Java window you have online interactive controls for viewing the data. You can sort the data by any column by clicking on the column header. The default sort is in ascending order; click again to toggle the sort to descending order. You also can change the column width and row height within the window. As with the static graph display above, a summary data table is included below the Java table.

- **Microsoft Excel Files**

The Excel option displays the raw data as an Excel file. You need to have Excel installed on your machine to view the data. If not, a free Excel viewer is available on the configuration page. With Excel installed, the display should automatically launch Excel and display your data.

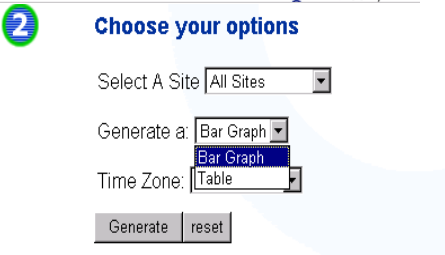
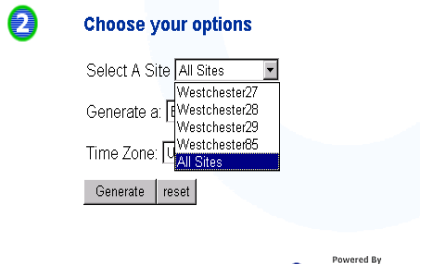
The volume of data will depend on the number of channels, the date range, and the summarization unit (e.g., daily).

You can then manipulate and save your data within Excel.

## DEMAND PROFILE

The demand profile report shows single or aggregated site peak demand over a selected period of time. The results reflect peak demand on a daily basis over the period of time selected.

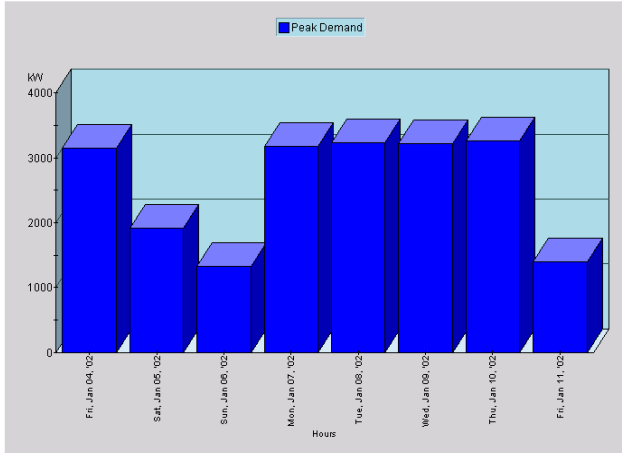
- Select time range**  
(assistance with the Calendar function is provided in Appendix A.)
- Select options**  
Options include site, view (bar graph or table), and time zone.



**View results**

Results can be viewed in either graphical or tabular format.

**Demand Profile for Friday , January 04, 2002 through Friday , January 11, 2002**



Day	Peak Demand
Fri, Jan 4, '02	3,150.72
Sat, Jan 5, '02	1,912.32
Sun, Jan 6, '02	1,330.56
Mon, Jan 7, '02	3,173.76
Tue, Jan 8, '02	3,237.12
Wed, Jan 9, '02	3,219.84
Thu, Jan 10, '02	3,254.40
Fri, Jan 11, '02	3,202.56

## LOAD DURATION CURVES

The Load Duration Curve indicates the percentage of time that the power was at or above various demand levels over a period of time. Each demand level that occurred during the selected time period is indicated on the Y-Axis versus the percentage of time the demand was at, or greater than, that level as indicated on the X-Axis. The Load Duration Curve is helpful for understanding the amount and duration of load on a system. The Load Duration curve is often used to determine if equipment is over or under sized based on the load it is serving.

**Pick a Time Range**

If using the calendar, select the month and year using the arrows. Double click on the day to select the day you want. The selected day will be highlighted by gray oval shape.

**1 Pick a time**  
 All interval data is requested and displayed using interval ending time.  
 E.g. To request a single day's data, select/enter Start Date: 01/01/2003 00:15  
 End Date : 01/02/2003 00:00

Choose a period from this list: Use Calendar

Start Date: 06-01-2003 12 15 AM

June 2003 12 00 AM

S	M	T	W	T	F	S
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5





Other Time options allow the user to enter a date, or use pre-set time periods (yesterday, last month, etc.)

❑ **Choose your Channels**

The user may select from kW, kVar, and if available, kVA channels

2

**Choose your channels**

West Chester, PA Long Name [ Hourly V ] 09-21-2002 to 06-17-2003  
 kW  kVar

❑ **Select Output Format**

The user may view the output as an interactive graph or an Excel file.

The user may select to see the Load as an absolute number or a percentage of the peak.

3

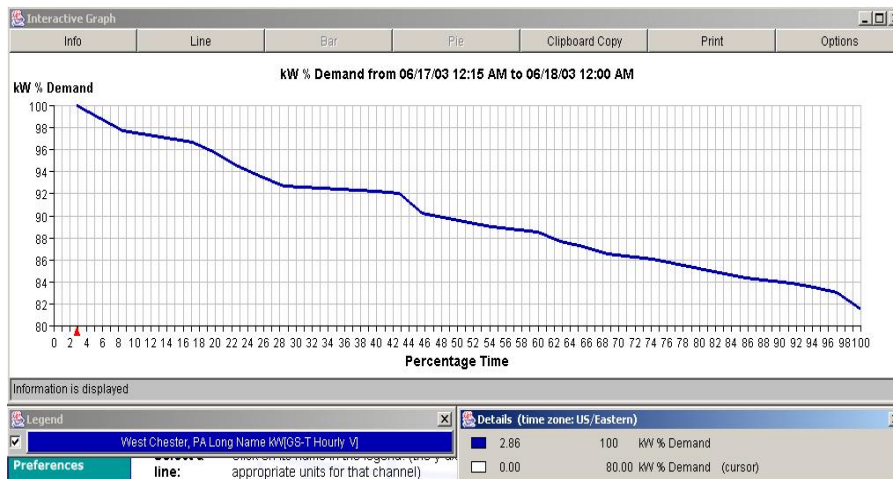
**Decide how you want to see it**

Create a:

Display demand as:

❑ **Create Result**

The user will click on 'Create' to view the results.



## EXCEPTIONS

The Exceptions feature of Central Hudson Energy Manager 3.0 is intended to provide a quick way of determining whether facilities are operating outside of normal energy patterns. The following information tools are part of the Exceptions feature.

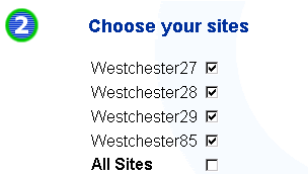
- ❑ **Overview**  
Report providing consumption exceeding high limit value, expressed on an hourly basis.
- ❑ **Exception Log**  
Report reflecting excess consumption.
- ❑ **Daily Usage Profile**  
Daily load curve plotting actual load, forecasted load, and high limit values.

## OVERVIEW

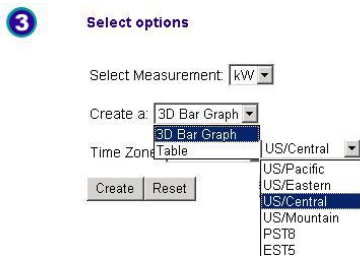
The Overview report identifies any given day's excess usage on a per-site basis. The report provides an instant visual indication of which sites experienced heavier than normal usage. For the purpose of this report, the high limit value is established as one standard deviation above the forecast. In Energy Manager 3.0 the forecast is generated through exponential smoothing of the past 28 days' consumption. The following steps will generate the report:

- ❑ **Select the day**  
(assistance with the Calendar function is provided in Appendix A)

- ❑ **Select sites**

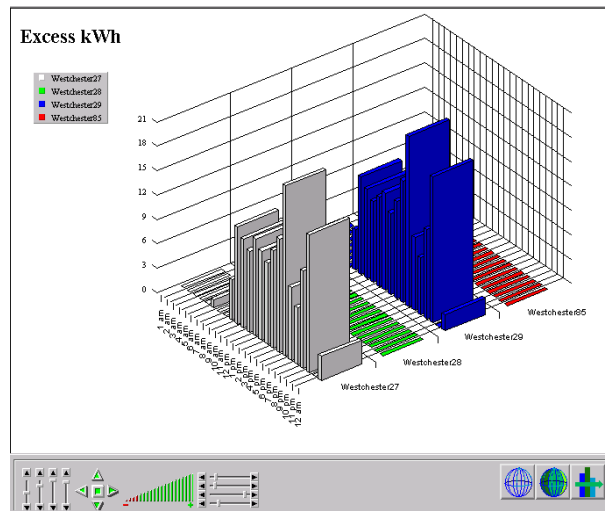


- ❑ **Select options, including view and time zone**



- ❑ **View results in either graphical or table format.**





**Demo Account**  
Enterprise Overview for Wednesday, December 19, 2001

Time	Westchester27	Westchester28	Westchester29	Westchest
1:00 AM	.00	.00	.00	.00
2:00 AM	.49	.03	.00	.00
3:00 AM	.00	.00	.00	.00
4:00 AM	.00	.00	.07	.00
5:00 AM	.00	.00	.00	.00
6:00 AM	.72	.00	.00	.00
7:00 AM	.00	.00	.00	.00
8:00 AM	.00	.00	.00	.00
9:00 AM	4.99	.00	5.27	.00
10:00 AM	11.86	.00	12.29	.00
11:00 AM	10.76	.00	11.25	.00
12:00 PM	10.10	.00	9.79	.00
1:00 PM	12.22	.00	11.02	.00
2:00 PM	11.42	.00	12.10	.00
3:00 PM	9.76	.00	10.14	.00
4:00 PM	12.25	.00	11.80	.00
5:00 PM	13.85	.00	14.54	.00
6:00 PM	20.88	.00	20.86	.00
7:00 PM	9.68	.00	9.71	.00
8:00 PM	7.47	.00	7.31	.00
9:00 PM	12.10	.00	10.81	.00
10:00 PM	17.08	.00	18.10	.00
11:00 PM	.46	.00	.35	.00
12:00 AM	2.76	.00	2.13	.00

## EXCEPTION LOG

The Exception log generates a table reflecting excess consumption over a range of days, as well as the exception's estimated cost. This report is provided on a site-by-site basis. As with the Overview report, exceptions are generated as a function of variance to the forecast. However, in this report you also have the opportunity to establish the high limit variable (expressed as standard deviations ranging from 0.0 to 5.0). In the following sample, a standard deviation of 0.5 was used. To generate a report, select your date range, sites to be viewed, and the viewing options.


- The date range can either be a single day or a range of days. Use the calendar function to select the date range (assistance with the Calendar function is provided in Appendix A).
- Select sites

**2 Choose your sites**

- Westchester27
- Westchester28
- Westchester29
- Westchester85
- All Sites**

- Select options, including view (daily lay-out, or sum data across days), view all sites or only those with exceptions, set the high limit value, and select the time zone.



 **Select options**

View Data As

Show Only Sites With Exceptions

Adjust High Limit Line\*:

\*Enter a number between 0 and 5. This is the number of standard deviations the High Limit Line will be above the Forecasted Load.

Time Zone:

□ View results

**Demo Account**  
**Exception Log for Monday , July 16, 2001 through Tuesday , July 31, 2001**

	Date	Site	Excess kWhr	Excess Cost
<a href="#">View Graph</a>	2001-07-16	Westchester27	88.86	3.94
<a href="#">View Graph</a>	2001-07-17	Westchester27	181.04	8.00
<a href="#">View Graph</a>	2001-07-18	Westchester27	291.50	11.66
<a href="#">View Graph</a>	2001-07-19	Westchester27	464.51	20.76
<a href="#">View Graph</a>	2001-07-20	Westchester27	906.11	40.69
<a href="#">View Graph</a>	2001-07-21	Westchester27	.00	.00
<a href="#">View Graph</a>	2001-07-22	Westchester27	.00	.00
<a href="#">View Graph</a>	2001-07-23	Westchester27	20,164.39	808.60
<a href="#">View Graph</a>	2001-07-24	Westchester27	258.00	11.04
<a href="#">View Graph</a>	2001-07-25	Westchester27	60.26	2.82
<a href="#">View Graph</a>	2001-07-26	Westchester27	52.00	2.40
<a href="#">View Graph</a>	2001-07-27	Westchester27	412.32	16.49
<a href="#">View Graph</a>	2001-07-28	Westchester27	9.37	.38
<a href="#">View Graph</a>	2001-07-29	Westchester27	.00	.00
<a href="#">View Graph</a>	2001-07-30	Westchester27	590.53	25.86
<a href="#">View Graph</a>	2001-07-16	Westchester29	13,256.61	592.72
<a href="#">View Graph</a>	2001-07-17	Westchester29	13,944.82	627.10
<a href="#">View Graph</a>	2001-07-18	Westchester29	4,030.33	161.21
<a href="#">View Graph</a>	2001-07-19	Westchester29	.00	.00
<a href="#">View Graph</a>	2001-07-20	Westchester29	.00	.00
<a href="#">View Graph</a>	2001-07-21	Westchester29	.00	.00
<a href="#">View Graph</a>	2001-07-22	Westchester29	.00	.00
<a href="#">View Graph</a>	2001-07-23	Westchester29	.00	.00
<a href="#">View Graph</a>	2001-07-24	Westchester29	.00	.00
<a href="#">View Graph</a>	2001-07-25	Westchester29	.00	.00

Clicking View Graph can view each exception through a daily interactive graph for the representative day.

The Sum Data across Days table provides a summary of exception and cost over the selected period of time.

**Demo Account**  
**Exception Log for Monday , July 16, 2001 through Tuesday , July 31, 2001**

Site	Excess kWhr	Excess Cost
Westchester27	21,337.42	856.71
Westchester29	21,486.86	906.15
Total	42,824.28	1,762.86

**DAILY USAGE PROFILE**

The Daily Usage Profile report provides a detailed look at each day. This multi-line graph enables you to view the actual load, forecasted load, and high limit for any single site on any selected day. Similar to the Exception Log, you have the opportunity to select the high limit value. To view the report, select the day, individual sites or all sites, output (an interactive graph or table), the high limit value, and the time zone.



## Demo Account Daily Load Profile

Data is available from *Wednesday, 02 June 1999 02:00:00 to Monday, 14 January 2002 00:15:00*  
 Availability of data may vary from site to site.

### 1 Pick a day

23-Jul-2001

### 2 Choose your options

Select A Site: Westchester27

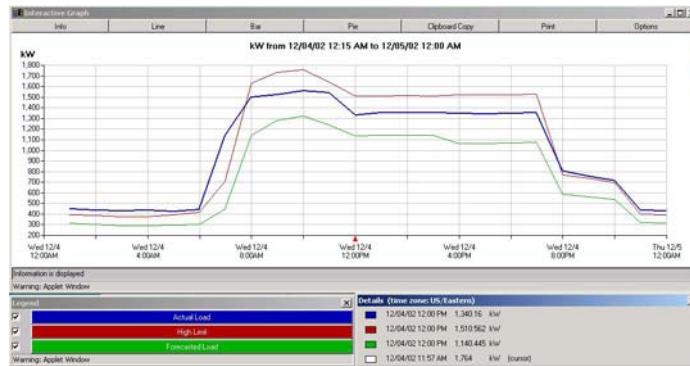
Generate as: Interactive Graph

Adjust High Limit Line\*: 5

\*Enter a number between 0 and 5. This is the number of standard deviations the High Limit Line will be above the Forecasted Load.

Time Zone: US/Central

Generate reset



## HOURLY DATA

Hourly data provides alternative reports not based on exceptions, including the following:

- Daily Usage Profile**  
Report providing consumption exceeding high limit value, expressed on an hourly basis
- Aggregate Load**  
View of total energy consumed on an enterprise basis
- Weekly Usage Profile**  
Quick report to easily view load of a site for a week's period of time
- Meter Usage**  
Weekly load curve for detecting and highlighting daily variations at the meter level

## DAILY USAGE PROFILE

This report and process are identical to that described in the previous section.

## AGGREGATE LOAD

The Aggregate Load report provides a bar graph, or table, reflecting an enterprise wide view for the total energy consumed, sorted by hour or load, over a selected time range. To view the report, select the date range by using the calendar function, any or all sites, and determine the options [view (bar graph or table), sort method (hour or load), and the time zone].

**1 Pick a time range**

Start Date: 01-Dec-2001

End Date: 19-Dec-2001

**2 Choose your sites**

Westchester27

Westchester28

Westchester29

Westchester85

All Sites

**3 Choose options**

Generate a: Bar Graph

Sort by: Hour

Time Zone: US/Central

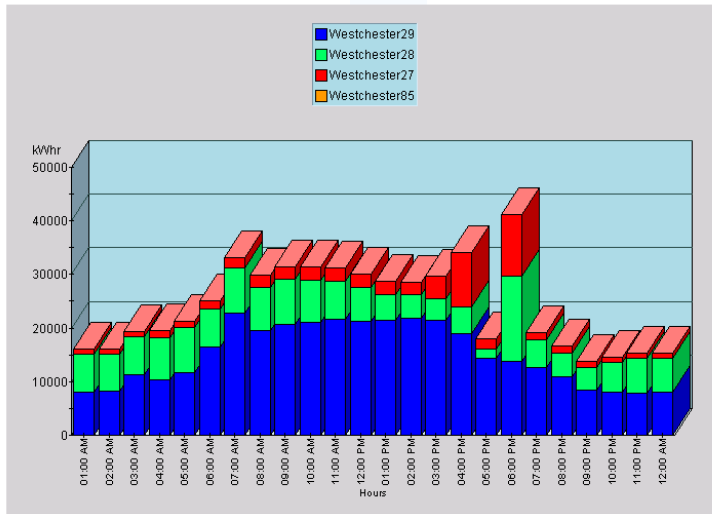
Generate reset



Results of Sort by Hour

Demo Account

Aggregate Load Profile for Sunday, July 01, 2001 through Tuesday, July 31, 2001



Results of Sort by Load

Demo Account

Aggregate Load Profile for Sunday, July 01, 2001 through Tuesday, July 31, 2001

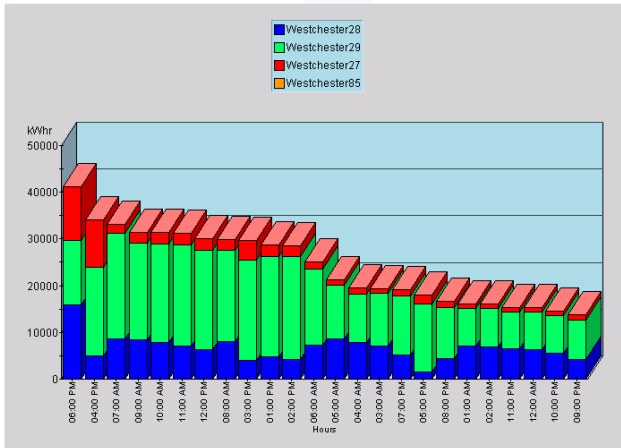


Table View

Demo Account

Aggregate Load Profile for Sunday, July 01, 2001 through Tuesday, July 31, 2001

Time	Westchester27	Westchester28	Westchester29	Westchester85
6:00 PM	11,512.00	15,965.75	13,699.62	
4:00 PM	10,215.00	4,892.92	18,969.71	
7:00 AM	1,955.00	3,569.89	22,703.54	
9:00 AM	2,413.00	8,443.58	20,625.71	
10:00 AM	2,497.00	7,827.66	21,113.46	
11:00 AM	2,488.00	7,119.74	21,637.76	
12:00 PM	2,519.00	6,278.35	21,333.13	
8:00 AM	2,347.00	8,093.91	19,450.03	
3:00 PM	4,224.00	4,072.53	21,454.78	
1:00 PM	2,506.00	4,833.04	21,434.90	
2:00 PM	2,417.00	4,271.69	21,908.63	
6:00 AM	1,389.00	7,188.99	16,427.29	
5:00 AM	1,041.00	8,559.82	11,648.90	
4:00 AM	1,350.00	7,856.98	10,300.54	
3:00 AM	980.00	7,082.62	11,297.16	
7:00 PM	1,430.00	5,138.15	12,682.89	
5:00 PM	2,010.00	1,556.84	14,452.65	
8:00 PM	1,362.00	4,498.33	10,832.71	
1:00 AM	881.00	7,146.10	8,079.75	
2:00 AM	887.00	6,932.99	8,218.46	
11:00 PM	974.00	6,502.71	7,882.56	
12:00 AM	924.00	6,301.05	8,013.02	
10:00 PM	965.00	5,524.25	8,137.87	
9:00 PM	1,124.00	4,272.71	8,395.52	

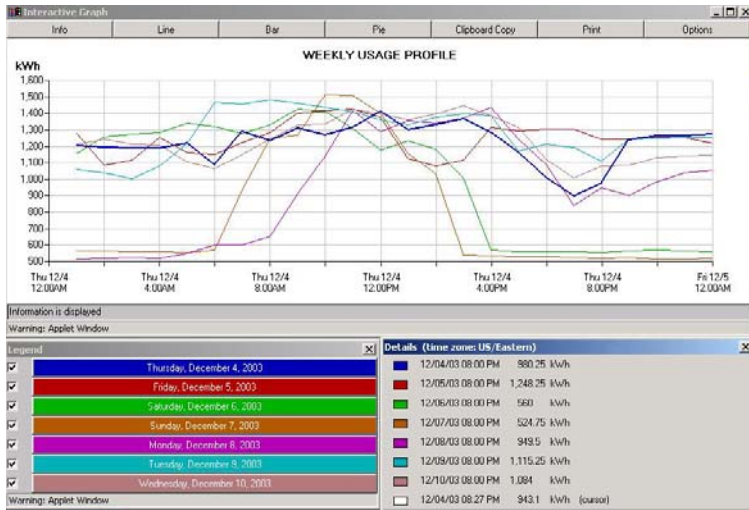


## WEEKLY USAGE PROFILE

The Weekly Usage Profile feature provides a multi-line graph for detecting and highlighting day-to-day variations within the same facility.

Begin by selecting a starting day. Then choose the options of site/facility, measurement, display format, time zone.

Then select “create” to view the following weekly load profile.



The graph is interactive so as the mouse moves across data the details are reflected in the lower right corner. To highlight a specific day's load profile select the appropriate bar on the lower left side. To enlarge an area of the weekly load profile then use the mouse to click and drag across an area of the graph. The same data can be viewed in a bar chart or pie chart format.

## METER USAGE

The Meter Usage report provides a weekly usage curve for detecting and highlighting daily variations within a specific site. This application works best when looking at facilities that are sub-metered. To view the report, select the beginning day using the calendar function. Then, select options including site (any single site or all sites), measurement (kWh, kW, kVARh, kVAR, MCF), view (bar graph or table), and the time zone.





### Demo Account Meter Load Profile

Data is available from *Wednesday, 02 June 1999 02:00:00 to Monday, 14 January 2002 00:15:00*  
 Availability of data may vary from site to site.

**1** Pick a starting day

**2** Choose your options  
 Select Site:   
 Select Measurement:   
 Generate a:   
 Time Zone:

### Results



## ALARMS

The Alarming & Notification feature provides an active tool to assist in monitoring operations. The feature operates off of metered data and client-established thresholds. When alarms are detected, a message is sent to the user via e-mail and/or an e-mail enabled pager.

To establish an alarm, the user selects the Alarms tab, selects Create Alarms, and selects Create New Alarm.

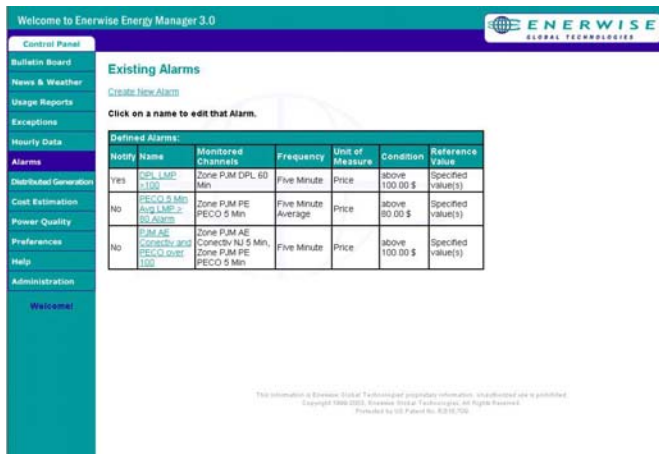
The following page appears:

Then, the user makes the following choices or entries:

- Name of Alarm, and whether notifications should be sent
- Active/Inactive Status- allows the client to activate and de-activate an alarm without deleting it or its detection list
- Frequency (daily, hourly, 15-minute for interval data; 5-minute and 5-minute rolling average for pricing)
- Unit of Measure for the alarm (e.g. consumption, demand, price, etc.)
- Channel
- Variance (expected values by specific percentage or specific values)
- High and low values
- Reference value (limited to specific value at this time)
- Recipients to receive e-mail notification

Once the alarms have been established a listing will appear. Click on the specific alarm to make modifications.

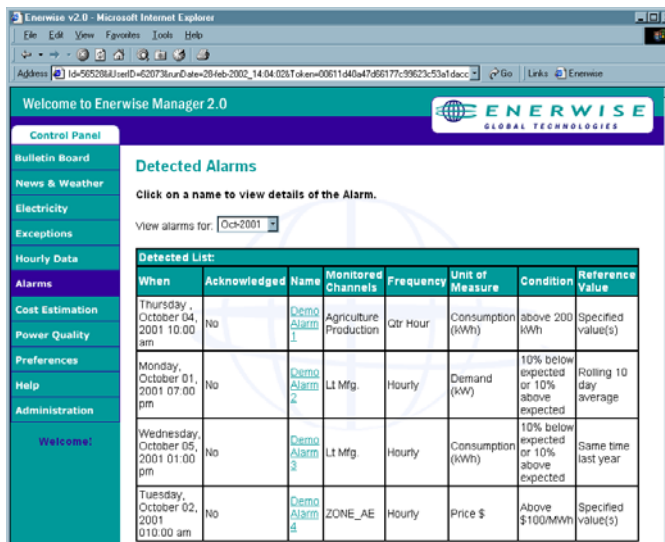




□

### SAMPLE ALARMING REPORT

Once alarms have been generated, the client can view these alarms by clicking on 'Detected Alarms' from the Alarms page. A monthly timeframe can be selected and the detected alarm list will be provided.



The specific alarm can be selected to view addition information.



# COST ESTIMATION

The Central Hudson Energy Manager 3.0 Cost Estimation feature provides a means to generate energy cost estimates for each or all of your metered sites. It also provides the capability to evaluate costs against other regional tariffs. Users can calculate bills for sub-metered facilities (i.e., cost allocation) and evaluate cost on a calendar instead of a utility billing cycle. Using an existing tariff library, users can generate estimates of costs based on metered data. This information can be used for verification of utility-generated bills. Additionally, Cost Estimation allows users to complete a series of “what-if” analysis scenarios, to determine the effects of operational or tariff changes on costs.

## CONFIGURE YOUR ESTIMATE

On the Cost Estimation configuration screen you specify the date range for any or all of your metered channels and select the tariff type. The tool remembers what you enter and displays it automatically the next time you use Cost Estimation.

### ❑ Select a time period

Select Manually Enter Dates or Billing Cycle. The date configuration screen will adjust based on your selection.

#### Select a time period.

*Configuration for billing cycle*

Manually enter dates  
 Billing Cycle  
 Start Period:   
 End Period:

*Configuration for manual date entry, including calendar pop-up*

Manually enter dates  
 Enter the start and stop date here:  
 Start Date:      
 End Date:



For billing cycles, select both a start period and an end period for the estimate.

For manual date entry, click the arrow in the start or end period of the date form and double-click a date on the calendar to add it to the date form. Navigate through the calendar using the arrows at the top.

[Note: your estimate will be broken down by the billing periods covering your manual start and end dates.]



**❑ Select sites and tariffs.**

Select any or all of your metered sites using the checkboxes. For each selected site, select a tariff from the drop-down list. Central Hudson can provide a variety of available tariffs based on your location.

**❑ Generate your estimate**

Click View Results to generate your cost estimate.

**❑ View your estimate**

Your estimate displays in three sections. A table of contents provides a summary view of the report with easy links to details for each site and the grand total. The second section includes the estimate details for each meter you selected on the configuration screen. The final section presents a grand total.

Table of Contents	
Site: Agriculture Production -- Rate: GS-T (General Service - Transmission Rate)	
Period: 08/01/2001 00:00 to 09/01/2001 00:00	<a href="#">Link</a>
Period: 07/01/2001 00:00 to 08/01/2001 00:00	<a href="#">Link</a>
Period: 06/01/2001 00:00 to 07/01/2001 00:00	<a href="#">Link</a>
Period: 05/01/2001 00:00 to 06/01/2001 00:00	<a href="#">Link</a>
Period: 04/01/2001 00:00 to 05/01/2001 00:00	<a href="#">Link</a>
Period: 03/01/2001 00:00 to 04/01/2001 00:00	<a href="#">Link</a>
Period: 02/01/2001 00:00 to 03/01/2001 00:00	<a href="#">Link</a>
Period: 01/01/2001 00:00 to 02/01/2001 00:00	<a href="#">Link</a>
Period: 12/01/2000 00:00 to 01/01/2001 00:00	<a href="#">Link</a>
Site Totals for Agriculture Production	

——— Estimate table of contents

The table of contents entries link to the sections below

Results	
Site: Agriculture Production -- Rate: GS-T (General Service - Transmission Rate)	
Period: 08/01/2001 00:00 to 09/01/2001 00:00	

Item	Quantity	Price	Amount
Customer Charge		432.8600000	432.86
Distribution Charge - Demand	8381 kW	1.2960000	10,861.78
Comp. Trans. Charge - Demand	8381 kW	1.0860000	9,101.77
Comp. Trans. Charge - Energy	1379339 kWh	-0.0003150	-434.49
Environmental Fund Rate	1379339 kWh	0.0001780	245.52
Low-Income Fund Rate	1379339 kWh	0.0000950	131.04
Power Factor Adjustment	8381 kW	-0.1200000	-1,005.72
<b>Total Delivery Charges</b>			<b>19,332.75</b>
Supply Service Charge - Demand	8381 kW	7.6750000	64,324.18
Supply Charge On-Peak Energy	606627 kWh	0.0325930	19,771.79
Supply Charge Off-Peak Energy	772712 kWh	0.0258880	20,003.97
<b>Total Supply Service Charges</b>			<b>104,099.94</b>
Transmission Demand Charge	8381 kW	1.1380000	9,537.58
Ancillary Service Charge	1379339 kWh	0.0008740	1,205.54
<b>Total Transmission Charges</b>			<b>10,743.12</b>
<b>Total Electric Charges</b>			<b>134,175.81</b>

——— Estimate details for site & billing period

Grand Total For All Sites			
Item	Quantity	Price	Amount
Delivery Subtotal			184,261.84
Supply Subtotal			1,615,660.78
Transmission Subtotal			125,925.64
<b>Total Electric Charges</b>			<b>1,936,431.87</b>

——— Grand total for estimate

**“WHAT-IF” ANALYSIS**

You can select the Change Attributes checkbox and adjust the attributes for any or all sites. This supports building highly configured scenarios for your strategic energy analysis and planning.



Select the sites and tariffs you want to see cost estimates for:

Site and tariff selection box

**Agriculture Production,, Feb 1997 - Aug 2001,**

Select tariff:

Change Attributes

kW(Hr)  kW  kVar(Hr)

State Tax  City Tax

Attribute adjustment controls for building a custom "what-if" scenario

- 50% less
- 40% less
- 30% less
- 20% less
- 10% less
- No change**
- 10% more
- 20% more
- 30% more
- 40% more
- 50% more

- Generate your estimate**  
Click View Results to generate your cost estimate.



## PREFERENCES

To maximize the usefulness of Central Hudson Energy Manager 3.0, each client can customize its web page to link to different news and weather sites.

Additionally, each client can modify his password from the preferences page.

### CONFIGURE YOUR NEWS PREFERENCES

Select your global Preferences tool from the menu. The following screen illustration shows how you select any or all of the available news channels for your users.

Customize your *News and Weather* page by adding or removing links in the form below.

Check  each link you wish to keep. Uncheck each one you wish to remove.

When you have finished, click on **Save** to update your preferences.

*News configuration screen* \_\_\_\_\_

<input checked="" type="checkbox"/> <b>Name:</b>	<input type="text" value="Technology News"/>
<b>URL:</b>	<input type="text" value="http://www.cnet.com/"/>
<b>Description:</b>	<input type="text" value="Recent events in computing"/>

### CHANGING YOUR PASSWORD

From the Preferences page, the client can click on 'Your Password', which will display the following page,

#### Changing Password For User: Demo

**Old Password:**

**New Password:**

**Confirm New Password:**

from which the client can update his password. Central Hudson has developed the following password protocol:

- minimum of 8 characters, maximum of 20 characters
- contain at least 3 numbers
- contain at least 4 letters (1 must be uppercase and 1 must be lowercase).
- contain \$ or # symbol







## APPENDIX A

### USING THE CALENDAR FUNCTION



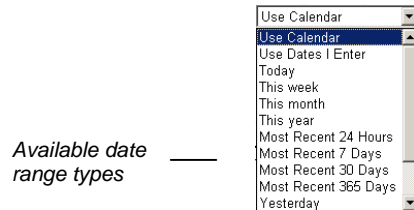
# USING THE CALENDAR FUNCTION

## Date

All of the various reports available through Central Hudson Energy Manager3.0 require the selection of a time period. Designed for your convenience, the system provides various options.

- ❑ Select a date range

Select one of the date range types from the drop-down list, as shown in the following screen illustration. The screen will adjust appropriately for the value you select. For example, selecting Use Dates|Enter presents input boxes for you to type start and end dates manually.



- ❑ Select a time period from the drop-down list.

- *Special Instructions*

- *Use Calendar*

For both Start and End Dates, select dates from the pop-up calendar. Double-click the date to close the calendar. Move through the calendar using the top arrows.

### Pick a time

Choose a period from this list:

Start Date:

End Date:



- Use Dates|Enter

Type both Start and End Dates. Valid date formats follow:

- January 1, 2001
- January 1, 2001 15:00
- Jan 1, 2001
- Jan 1, 2001 10:15
- 1/1/2001
- 1/1/2001 22:30
- 5 days ago
- 3 months ago
- Yesterday



## **APPENDIX B**

### **DEFINITIONS**



## DEFINITIONS

<b><i>Aggregation</i></b>	Amassing volumes of energy from different sources to create a larger "package"
<b><i>Ampere</i></b>	The unit of measurement of electrical current produced in a circuit by 1 volt acting through a resistance of 1 ohm.
<b><i>Baseload</i></b>	The minimum amount of electric power delivered or required over a given period of time at a steady rate
<b><i>Btu (British Thermal Unit)</i></b>	The standard unit for measuring the quantity of heat energy (e.g., heat content of fuel); one Btu is the amount of heat necessary to increase the temperature of one pound of water by one degree Fahrenheit (3,412 Btu's = 1 kWh)
<b><i>Capacitor</i></b>	A device that improves the efficiency of the flow of electricity through distribution lines by reducing energy losses
<b><i>Capacity</i></b>	The amount of electric power delivered or required for which a generator, turbine, transformer, transmission circuit, station, or system is rated by the manufacturer
<b><i>Capacity Charge</i></b>	An element in a two-part pricing method used in capacity transactions (energy charge is the other element); the capacity charge, sometimes called Demand Charge, is assessed on the amount of capacity being purchased.
<b><i>Circuit</i></b>	A conductor or a system of conductors through which current flows
<b><i>Cogenerator</i></b>	A generating facility that produces electricity and another form of useful thermal energy (such as heat or steam) used for industrial, commercial, heating, or cooling purposes; to receive status as a qualifying facility (QF) under the Public Utility Regulatory Policies Act (PURPA), the facility must produce electric energy and another form of useful thermal energy through the sequential use of energy and meet certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission (FERC) (Code of Federal Regulations, Title 18, Part 292)
<b><i>Coincidental Demand</i></b>	The sum of two or more demands that occur in the same time interval

<b><i>Coincidental Peak Load</i></b>	The sum of two or more peak loads that occur in the same time interval
<b><i>Combined Cycle</i></b>	An electric generating technology in which electricity is produced from otherwise lost waste heat exiting from one or more gas (combustion) turbines; the exiting heat is routed to a conventional boiler or to a heat recovery steam generator for use by a steam turbine in the production of electricity; this process increases the efficiency of the electric generating unit
<b><i>Current (Electric)</i></b>	A flow of electrons in an electrical conductor; the strength or rate of movement of the electricity is measured in amperes
<b><i>Demand (Electric)</i></b>	The rate at which electric energy is delivered to or by a system, part of a system, or piece of equipment, at a given instant or averaged over any designated period of time
<b><i>Direct Access</i></b>	An arrangement in which customers can purchase electricity directly from any supplier in the competitive market, using the transmission and distribution lines of electric utilities to transport the electricity
<b><i>Disco</i></b>	Short for distribution company; a type of company that distributes electricity to customers, but does not provide generation or transmission services
<b><i>Distribution</i></b>	The facilities of the electric system that deliver electricity from substations to customers; the distribution system "steps down" power from high voltage transmission lines to a level that can be used in homes and businesses
<b><i>Distribution Line</i></b>	A line, system, or circuit for distributing power from a transmission system to a customer; These lines operate at less than 69,000 volts
<b><i>EDC</i></b>	Electric Distribution Company



<b><i>Energy</i></b>	The capacity for doing work as measured by the capability of doing work (potential energy) or the conversion of this capability to motion (kinetic energy); energy has several forms, some of which are easily convertible and can be changed to another form useful for work; most of the world's convertible energy comes from fossil fuels that are burned to produce heat, which is then used as a transfer medium to mechanical or other means to accomplish tasks; electrical energy is usually measured in kilowatt-hours, while heat energy is usually measured in British thermal units (Btu's)
<b><i>Energy Charge</i></b>	That portion of the charge for electric service based on the electric energy (kWh) consumed or billed
<b><i>Federal Energy Regulatory Commission (FERC)</i></b>	A federal agency established in 1977, which regulates the wholesale electricity market (i.e., power and transmission sales and service between utilities and between utilities and non-utility generators); a quasi-independent regulatory agency within the Department of Energy having jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, oil pipeline rates, and gas pipeline certification
<b><i>Forced Outage</i></b>	The shutdown of a generating unit, transmission line, or other facility for emergency reasons or a condition in which the generating equipment is unavailable for load because of unanticipated breakdown
<b><i>Genco</i></b>	Short for generating company; a type of company that is solely engaged in the business of generating electricity
<b><i>Generating Station</i></b>	A building where electricity is made; this term is used interchangeably with "power plant"
<b><i>Gigawatt</i></b>	One billion watts, useful for describing the capacity of large electrical systems
<b><i>Green Pricing</i></b>	A term used to market electricity that is produced, at least in part, through renewable technologies; green pricing programs allow customers to support renewable programs, usually at a premium

<b><i>High Tension or Primary Distribution Feeder (Primaries)</i></b>	Lines that carry the highest distribution voltage; they are usually located at the uppermost position of the utility pole
<b><i>Horsepower</i></b>	A unit for measuring the power of motors or engines; one horsepower equals 746 watts. However, for all practical purposes, 1 horsepower is considered 1,000 watts or 1 kilowatt (figure considers starting load and motor inefficiency); for example, a 3-horsepower motor would be rated at approximately 3,000 watts or 3 kW, so a 1/3-horsepower motor would be rated at approximately 333 watts
<b><i>Host Utility</i></b>	The local franchised utility that serves retail customers in its service territory
<b><i>Independent Power Producer (IPP)</i></b>	A non-utility power generator that is not a regulated utility, government agency, or Qualifying Facility under the Public Utility Regulatory Practices Act of 1978 (PURPA); IPPs sell the power they generate in the wholesale market, typically to electric utilities; the terms of power purchase agreements between IPPs and power purchasers are subject to approval by the Federal Energy Regulatory Commission (FERC)
<b><i>Interconnection System</i></b>	A connection between two electrical systems permitting the transfer of electric energy in either direction
<b><i>Intermediate Load (Electric System)</i></b>	The range from base load to a point between base load and peak; this point may be the midpoint, a percent of the peak load, or the load over a specified time period

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***Interruptible Load*** Refers to program activities that, according to contractual arrangements, can interrupt consumer load at times of seasonal peak load by direct control of the utility system operator or by action of the consumer at the direct request of the system operator; it usually involves commercial and industrial consumers; in some instances the load reduction may be affected by direct action of the system operator (remote tripping) after notice to the consumer in accordance with contractual provisions; for example, loads that can be interrupted to fulfill planning or operation reserve requirements should be reported as Interruptible Load; Interruptible Load as defined here excludes Direct Load Control and Other Load Management (Interruptible Load, as reported here, is synonymous with Interruptible Demand reported to the North American Electric Reliability Council on the voluntary Office of Energy Emergency Operations Form OE-411, "Coordinated Regional Bulk Power Supply Program Report," with the exception that annual peak load effects are reported on Form EIA-861 and seasonal (i.e., summer and winter) peak load effects are reported on Form OE-411)

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***Kilovolt (kV)*** One thousand volts

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***Kilowatt (kW)*** One thousand watts

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***Kilowatt-hour (kWh)*** The basic unit of electric energy equal to 1 kilowatt or 1,000 watts of power used for one hour; the amount of power the customer uses is measured in kilowatt-hours (100 watts x 10 hours) or 1,000 watts used in 10 hours

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***kVAR*** kVAR (kilovars) is the typical unit of measure for "reactive power" (as compared to "real power," which is typically measured in kW); reactive power is the portion of electricity that establishes and sustains the electric and magnetic fields of alternating-current equipment; reactive power must be supplied to most types of magnetic equipment, such as motors and transformers; reactive power can be supplied by generators, synchronous condensers, or electrostatic equipment such as capacitors

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***kVARh*** The basic unit of reactive power equal to 1 kVAR used for one hour

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<b><i>LDC</i></b>	Local distribution company
<b><i>Load (Electric)</i></b>	The amount of electric power delivered or required at any specific point or points on a system; the requirement originates at the customer's energy-consuming equipment
<b><i>Load Factor (Annual)</i></b>	Ratio of annual energy usage to maximum summer demand: Percent Load Factor = $\frac{\text{Annual Energy Usage}}{\text{kW} \times 8,760 \text{ hours}} \times 100$
<b><i>Load Factor (Monthly)</i></b>	Ratio of energy usage to maximum demand during the month: Percent Load Factor = $\frac{\text{kWh} \times 100}{\text{kW} \div (\text{demand} \times 740 \text{ hours})} \times 100$
<b><i>Market-based Rates</i></b>	Rates for power or electric services that are established in an unregulated, competitive market; these rates can be established through competitive bidding or through negotiations between the buyer and seller, rather than set by a regulator; as portions of the electric industry become less regulated, market prices are increasingly important for making business decisions
<b><i>Megawatt</i></b>	One million watts or 1,000 kilowatts
<b><i>Meter Board</i></b>	The board on which the meter and associated equipment are mounted
<b><i>Network</i></b>	A system of transmission and distribution lines cross-connected and operated to permit multiple power supply to any principal point on it; network is usually installed in urban areas; it makes it possible to restore power quickly to customers by switching them to another circuit
<b><i>Non-coincident Peak Load</i></b>	The sum of two or more peak loads on individual systems that do not occur in the same time interval; meaningful only when considering loads within a limited period of time, such as a day, week, month, a heating or cooling season, and usually for not more than 1 year
<b><i>Non-Firm Power</i></b>	Power or power-producing capacity supplied or available under a commitment having limited or no assured availability

<b><i>Non-Utility Generator (NUG)</i></b>	A term coined to describe Qualifying Facilities, independent power producers, exempt wholesale generators, and any other company in the power generation business, which has been exempted from traditional utility regulation; some NUG facilities are built by users primarily for their own energy needs; other NUG plants are built specifically to sell power to utilities under long-term contracts; in the last five years, non-utility generators have constructed over 50 percent of new generation capacity
<b><i>Ohm</i></b>	The unit of measurement of electrical resistance; the resistance of a circuit in which a potential difference of 1 volt produces a current of 1 ampere
<b><i>Open Transmission Access</i></b>	Enables all participants in the wholesale market equal access to transmission service, as long as capacity is available, with the objective of creating a more competitive wholesale power market; the Energy Policy Act of 1992 gave the Federal Energy Regulatory Commission (FERC) authority to order utilities to provide transmission access to third parties in the wholesale electricity market
<b><i>Outage</i></b>	The period during which a generating unit, transmission line, or other facility is out of service
<b><i>Peak Demand</i></b>	The maximum load during a specified period of time
<b><i>Power</i></b>	The rate at which energy is transferred; electrical energy is usually measured in watts; also used for a measurement of capacity
<b><i>Power Broker</i></b>	An individual, who arranges power sales between other parties, but never actually owns the power; power brokers are not required to register with the Federal Energy Regulatory Commission
<b><i>Power Grid</i></b>	A network of power lines and associated equipment used to transmit and distribute electricity over a geographic area

<b><i>Power Marketer</i></b>	An individual who sells power that it either buys or generates on its own; power marketers are a type of electricity supplier greatly expanded by the Energy Policy Act of 1992; sales of electricity by power marketers jumped from near zero in 1992 to 70 million megawatt hours in 1996; power marketers are required to be certified by FERC
<b><i>Power Pool</i></b>	An association of two or more interconnected electric systems having an agreement to coordinate operations and planning for improved reliability and efficiencies
<b><i>Primary Metering</i></b>	The primary metering flag indicates that electricity delivered to a customer is measured in primary voltage
<b><i>Public Utilities Commission</i></b>	The state regulatory agency that governs retail utility rates and practices and, in many cases, issues approvals for the construction of new generation and transmission facilities; on average, roughly the state commission regulates 90 percent of a utility's operations
<b><i>Reliability</i></b>	The ability to deliver uninterrupted electricity to customers on demand, and to withstand sudden disturbances such as short circuits or loss of major system components; this encompasses both the reliability of the generation system and of the transmission and distribution system
<b><i>Retail Wheeling</i></b>	A transmission or distribution service by which utilities deliver electric power sold by a third party directly to retail customers; this would allow an individual retail customer to choose his or her electricity supplier, but still receive delivery using the power lines of the local utility
<b><i>Scheduled Outage</i></b>	The shutdown of a generating unit, transmission line, or other facility, for inspection or maintenance, in accordance with an advance schedule
<b><i>Spinning Reserve</i></b>	That reserve generating capacity running at a zero load and synchronized to the electric system

<b><i>Standard Industrial Classification (SIC)</i></b>	A set of codes developed by the Office of Management and Budget, which categorizes business into groups with similar economic activities; the transition to NAICS (North American Industry Classification System) began in 1997 and is supposed to be complete by the end of 2002
<b><i>Stranded Costs</i></b>	Costs that were incurred by utilities to serve their customers with the understanding that state regulatory commissions would allow the costs to be recovered through electric rates; stranded costs can occur either because particular customers discontinue their use of a service or because such customers are no longer willing to pay the full cost incurred to provide a service; potentially stranded costs are the result of decisions that were reviewed and approved by government regulators and were made by utilities under the unique regulatory compact with their state and their customers; the Federal Energy Regulatory Commission has determined that stranded costs, at the wholesale level, should be paid by electric customers
<b><i>Transmission Lines</i></b>	Wires that carry high voltage electricity over long distances from a generating station to places where electricity is needed; transmission lines are held high above the ground on transmission towers
<b><i>Unbundling</i></b>	Electric service is traditionally provided on a bundled basis, meaning that generation, transmission and distribution services are provided as a single package; by unbundling, the package offerings of the various services that make up traditional utility service are separated into discreet, separately priced components; an example would be selling electric power distribution as a separate service without including costs associated with power generation or transmission services; unbundling could allow the customer to select a different supplier or source for each of the components required to obtain a product or service; also referred to as functional unbundling
<b><i>Volt</i></b>	A unit of electrical pressure that measures the force or push of electricity; volts represent pressure, corresponding to the pressure of water in a pipe
<b><i>Voltage</i></b>	A measure of the force of moving energy

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***Voltage Reduction*** Any intentional reduction of system voltage by 3 percent or greater for reasons of maintaining continuity of service of the bulk electric power supply system

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***Watt (Energy)*** A measure of how much electricity an appliance needs; a watt is an electrical unit of power; this term is commonly used to rate appliances using relatively small amounts of electricity; there is a mathematical relationship between watts, volts, and amps:  $\text{Wattage} = \text{Amps} \times \text{Voltage}$ ; for example, a 120-volt, 15-amp circuit will carry 1,800 watts

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***Wholesale Wheeling*** The process of sending electricity from one utility to another wholesale purchaser over the transmission lines of an intermediate utility; under the Energy Policy Act of 1992, utilities are required to provide wholesale transmission wheeling services to any electric utility, federal power marketing agency, or any other company generating electric energy for sale in the wholesale market

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