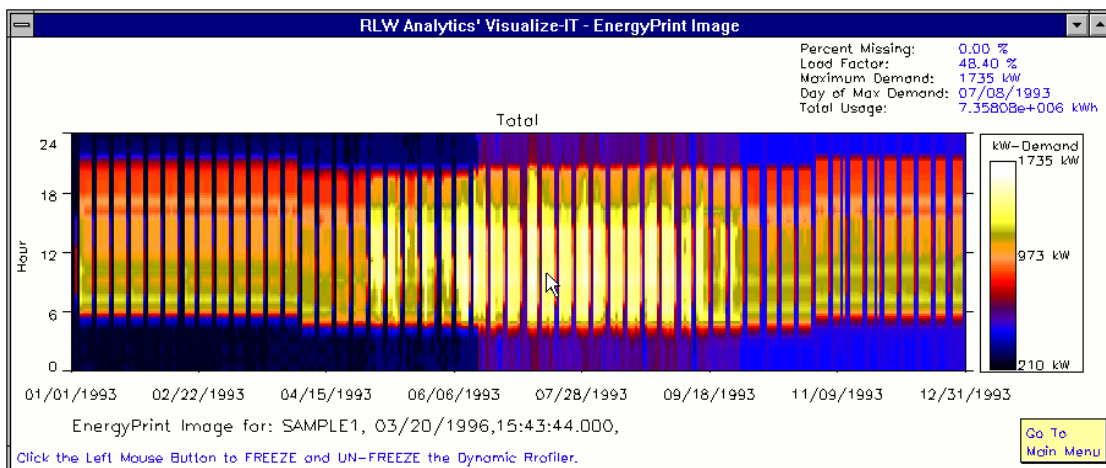


## THE ENERGYPRINT™ IMAGE

The primary building block in the EIT is the EnergyPrint™ image, a 3-dimensional plot of interval (15 minute, half hour, or hourly) energy related data. In the graph, the three dimensions are the time of day (on the Y axis), the day of the period (on the X axis), and the demand for each interval (represented using color). Lighter colors represent higher intensity of energy use and darker colors represent lower intensity of energy use. You can think of the EnergyPrint™ image as being a series of daily load shapes, stacked consecutively, color coded, and viewed from above. *Figure 1* provides an example of an EnergyPrint image. The EnergyPrint image provides an overall understanding of the data. You get a quick overview of the hours of operation, seasonal patterns, and the influence of end uses such as lighting or HVAC.

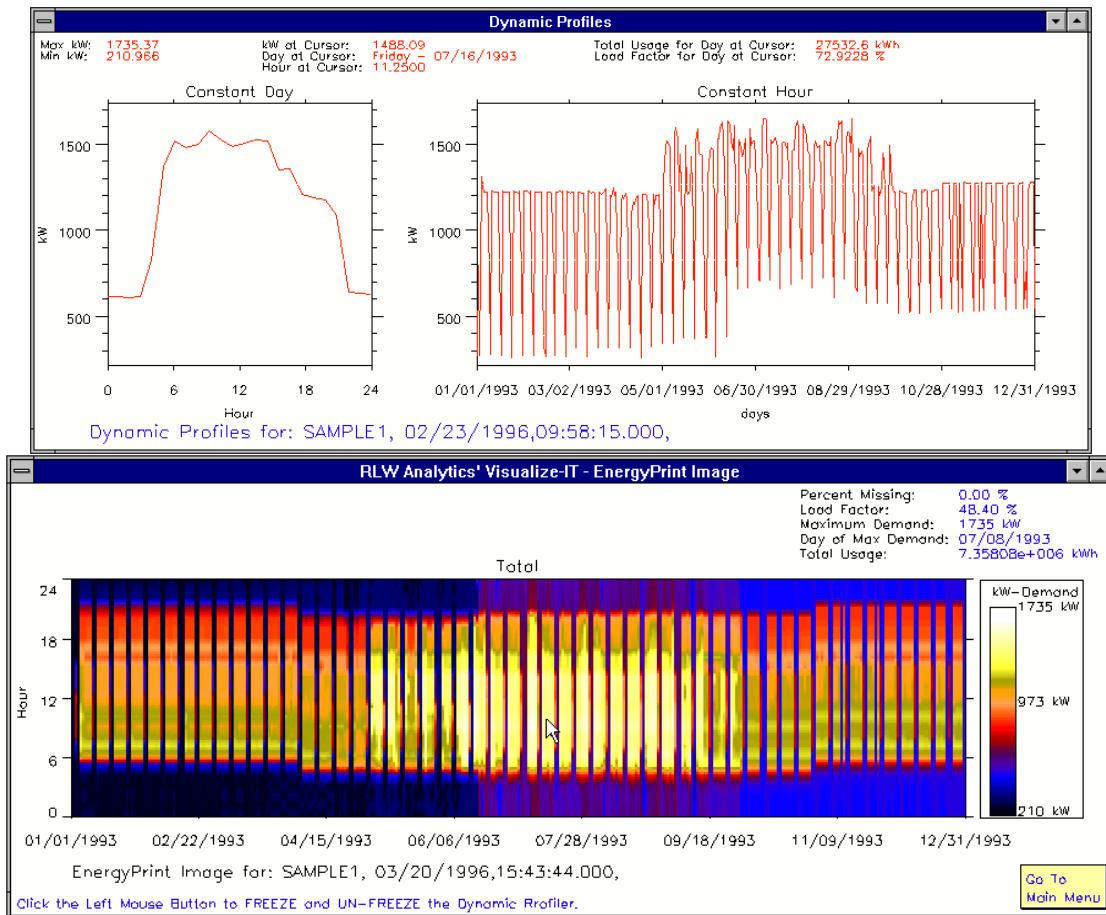


**Figure 1: Example of an EnergyPrint™ Image**

When you start the EIT, and then load your data, you see an EnergyPrint image of the first end use of your data. Immediately thereafter the Main Menu appears listing your exploration options.

## DYNAMIC PROFILER

The *Dynamic Profiler* is a great tool for actively exploring your data. An EnergyPrint™ image of the end use of choice is displayed in a window at the bottom of your screen, and a window above it shows graphs of the familiar load shape on the left and the not so familiar constant hour shape (think of it as a horizontal slice of the EnergyPrint image) on the right (seen in *Figure 6*). As you move your mouse around the EnergyPrint image, the two graphs are constantly refreshed. This shows you what is happening at the exact location of your cursor and allows for very precise exploration. You can freeze the *Dynamic Profiler* graphs in position with a click of the left mouse button, then save the graphs to a graphics file (as a bitmap or BMP file).



**Figure 6: Dynamic Profiler Example**

In addition to the EnergyPrint image and the load shape graphs, the *Dynamic Profiler* generates other useful information. In the EnergyPrint image window you will see the following information: Percent of data missing, load factor for the whole end use, maximum demand, day of maximum demand, and total usage. The *Dynamic Profiler* window will show: maximum and minimum demand for the end use, demand at the cursor, date and day of the week at the cursor, hour at the cursor, total usage for the day at the cursor and load factor for the day at the cursor.

## DATA CONSIDERATIONS

### ***How to get to Your Data***

In the directory "home\wave\bin\" (where home is the location that the Energy Information Tool was installed - most likely C:\VIZ\_IT\) there is a text file called "data\_dir.txt". Right now the last line in the file is "home\DEMODATA\". You can add paths to your data after the DEMODATA line, or you can replace the DEMODATA line. Make sure the paths include the drive letter, and the trailing "\" and a CARRIAGE RETURN after the last line.

### ***Data Formatting Information***

#### GENERAL NOTES:

There are currently two data formats that the Energy Information Tool can read.

The first is CSV format where each row is one interval, and each column is an end use. You must use this format if your data has multiple end uses.

The second is the hourly EEI format where each row represents one day.

The Energy Information Tool recognizes the type of file by the extension on the file. The "MTR" extension is for the CSV format, and "EE1" is for the EEI format.

The DATA file (whether CSV or EEI) must have a separate header file that includes information about the intervals per day, the beginning and end dates, the names of the end uses, and the units of measure for each end use. The name of the header file must match that of the DATA file. The extension will be different.

For example:

sample1.MTR & sample1.HDM  
sample2.EE1 & sample2.HDE

Load data should be in a demand format, kW units not kWh for example.

If you have 15 minute data and the Total kWh energy in an hour is the SUM of the four 15-minute intervals, then your data should be converted from kWh to kW by multiplying the value of each interval by 4.

Missing data should be denoted with a negative value - (which causes problems for temperature data, but we are working on that)

There must be data from midnight on the beginning day to midnight on the end date. DO NOT skip days or intervals. THIS IS VERY IMPORTANT. If there is not enough load research data, then the missing data must be "padded" or "filled" with missing values : "-1.00".

Please look at the demo data files and the header files in any text editor.

## **General Data Formatting**

NOTE: Each field in the header file MUST be COMMA SEPARATED.

HEADER LINE1: Identifying Name, Samples per day, Beginning Date, End Date, Number of end-uses, Number of columns of data.

HEADER LINE2: Name of End-Use 1, Name of End-Use 2, ... for each end use.

HEADER LINE3: Unit of Measure for End-Use 1, Unit of Measure for End-Use 2,... for each end use.

### HEADER DETAIL INFORMATION:

#### **Header Line 1:**

Identifying Name - Can be an account number or name. May contain spaces. Currently not used.

Intervals per day - Integer value for number of sample times per day. i.e. hourly data has 24 samples per day, 15 minute data has 96 intervals per day.

Beginning Date - In mm/dd/yy format.

End Date - In mm/dd/yy format.

Number of end-uses - Integer value for the number of end uses or channels of data to analyze.

Number of columns of data - Number of actual columns of data. This assumes that the superfluous data is in the left most columns. This could be a time/date stamp for each column of data, or account number.

#### **Header Line 2:**

Name of End-Use 1 - Like the Identifying Name, may contain spaces. Best if 8 characters or less.

**Header Line 3:**

Name of Unit of Measure for End-Use 1 - Best if it is 2 or 3 characters.

EXAMPLE HEADER FILE:

xxx , 24,01/01/91,06/28/92,9,11,  
Total Load,Water Heat,Spc Heat,Lite Int,Plugs,Lite Ext,Misc,Refrig,Cooking  
kW,Cf,Cf,kW,kW,kW,Cf,kW,Cf,

PARTIAL EXAMPLE CSV DATA FILE:

01/01/91 ,1.00 ,34.068 ,0 ,8.41 ,8.77 ,7.89 ,6.04 ,2.63 ,0.42 ,0 ,  
01/01/91 ,2.00 ,34.068 ,0 ,7.95 ,8.98 ,7.82 ,6.04 ,2.63 ,0.48 ,0 ,  
01/01/91 ,3.00 ,34.068 ,0 ,8.08 ,8.98 ,7.82 ,6.04 ,2.63 ,0.42 ,0 ,  
01/01/91 ,4.00 ,34.068 ,0 ,8.94 ,8.98 ,8.64 ,6.22 ,2.63 ,0.42 ,0 ,  
01/01/91 ,5.00 ,35.754 ,0 ,9.07 ,8.98 ,8.64 ,6.22 ,2.63 ,0.48 ,0 ,  
01/01/91 ,6.00 ,34.902 ,0 ,9.00 ,8.98 ,8.64 ,6.22 ,2.63 ,0.42 ,0 ,  
01/01/91 ,7.00 ,35.754 ,0 ,9.07 ,8.98 ,8.64 ,6.22 ,2.63 ,0.75 ,0 ,  
01/01/91 ,8.00 ,37.481 ,0.59 ,10.13 ,8.98 ,9.47 ,6.22 ,2.63 ,0.53 ,0 ,  
01/01/91 ,9.00 ,98.014 ,2.89 ,39.29 ,8.98 ,38.89 ,6.22 ,2.58 ,0.48 ,0 ,

PARTIAL EXAMPLE EEI DATA FILE:

H 47526040 930101 51 51 52 51 52 51 51 51 49 50 53 54 54 52 50 46 47 47 49 50 51 50 50 50  
N 47526040 930102 49 50 51 50 50 50 49 50 49 63 65 40 37 33 38 38 38 38 39 32 32 32 31 32  
N 47526040 930103 32 32 33 32 32 32 32 32 31 30 33 30 27 27 28 27 26 27 33 30 30 28 26 26  
W 47526040 930104 26 25 26 25 26 25 63 122 150 167 159 156 158 150 140 120 105 89 84 90  
88 83 36 29  
W 47526040 930105 29 29 30 29 29 29 57 122 158 162 161 150 156 151 146 121 93 86 92 84 92  
68 40 32