Metrix Report Maker

User's Guide

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Documentation Revision 11/16/2009

Introduction

Metrix and the Metrix Report Maker

Metrix Utility Accounting System, version 4, does not have a reporting engine. Instead, the software was designed so that reports could be made using Microsoft Excel. The Metrix Report Maker is an Excel-based reporting engine that creates reports for Metrix version 4. The Metrix Report Maker is bundled for sale and use with Metrix version 4. The Metrix Report Maker does not work with Metrix version 3.

Overview

The Metrix Report Maker is a great improvement over the reporting capability in Metrix 3. We found that the most common complaint associated with Metrix 3 was its limited reporting capacity, and that users could not simply create the types of reports they wanted. Another complaint was that if you wanted to make a graph of each Site or Area in a large project, you had to painstakingly go through several steps for each graph you produced.

The Metrix Report Maker has many of the reports that Metrix 3 users have asked for, in addition to many of the reports that were in Metrix 3. The report engine is entirely different, though. Reporting in Metrix 4 is done entirely in Excel. You do not even need to have Metrix open to create reports. Reports are made by making selections in a series of dialog boxes. The Report Maker is powered by a series of macros written in Excel VBA. Reports are written to a workbook, which might contain over a hundred reports, and they can then be printed or exported all at once.

If you don't like the formatting of your reports, since your reports are in Excel, you can easily change the formatting. In addition, you can write your own code, or record your own macros and add these to your Metrix Report Maker.

Running Report Maker for the First Time

The first time you run Report Maker you may have to change some settings in Microsoft Excel. If you receive any errors or are unable to run your Report Maker for any reason please **refer to the Metrix Installation Manual**. A copy may be found in the Metrix folder under Hard Drive > Program Files > Metrix 4 > Docs Folder.

The Main Menu

When you open the Metrix Report Maker, you will see the Main Menu shown below.

Figure 1: Metrix Report Maker Main Menu

On the left side of the Main Menu you will see a variety of options to select from. These options can also be displayed through the Excel toolbar by clicking on "Metrix" as seen in Figure 2. Note: the Excel toolbar for 2007 users will still have the "Metrix" menu but the menu will have a different appearance.
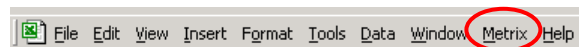

Figure 2: Microsoft Excel Menu in 2003

Not all of the options in the Excel menu are shown on the Main Menu. The following table gives a brief description of what each function does:

Table 1: Metrix Report Maker Menu Commands and Actions

Menu Command	Action
Front Page	Takes you to the Metrix Report Maker main menu
Report Maker Settings	Takes you to a dialog box where you can set preferences for: Directories, Table Defaults, Graph Defaults, Page Setup, Unit & Names Display, Project, Regional, and Misc Settings
Graph Color Settings	Takes you to the page where you can set what color you want associated with what year, scenario, etc.
Gas Emission Factors	Allows you to look at and edit factors used to determine emissions released by natural gas usage.
Electric Emission Factors	Allows you to look at and edit factors used to determine emissions released by electrical usage.
Load Data	Loads Metrix Project
Report Wizard or Create Reports	Takes you to the Report Selector Page, from where you launch your reports.
Fast Reports	Takes you to a separate Report Selector Page. Allows you to quickly run either a default Fast Report or a Memorized Report.
View Reports	Takes you to the Reports Workbook, so that you can view the reports you have made.
Print Reports	Calls the Print Reports Wizard.
Export Reports	Calls the Export Reports Wizard.
Delete a Report	Allows you to select a report to remove from the current Reports Workbook.
Change Report Headers and Footers	Allows you to change the Headers and Footers that are already in the Reports Workbook. This routine will change Headers and Footers for ALL reports in the Reports Workbook.
Change Report Paper Size	Allows you to change the Paper Size for ALL reports in the Reports Workbook.
Customize	Allows you to customize features of the Metrix Report Maker.
Help	Gives information about the technical support and the Metrix Report Maker.
Register	Displays Metrix Report Maker registration status and allows one to request or import a new license.

You can add your own commands to the Metrix Report Maker menu. See the section under Special Topics of this manual.

Items in the Task List

This section will describe in general how you operate the Metrix Report Maker.

After laying out the Project and importing your data, reports to compare usage from year to year can be created. The Metrix Report Maker (MRM) is a macro-driven Excel workbook. The MRM gathers data from Metrix 4 and will create a wide variety of reports. Metrix 4 does not need to be open to make reports using the MRM.

Loading Data

Creating reports first requires the input of data. From the Main Menu, the Metrix Report Maker will tell you to "Load data to start" as seen in Figure 3.

Figure 3: Front Page of Metrix Report Maker Informing User to "Load data to start"

To load data, click on the Load Data button on the Front Page, or select the Load Data command from the Metrix Menu. A dialog box that allows the selection of a Metrix project will be seen.
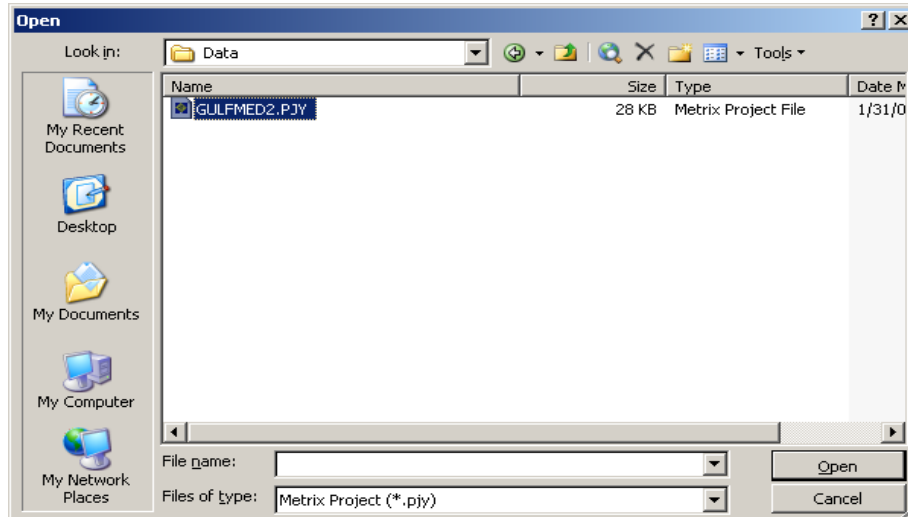
Figure 4: Selecting the Project from the Data File

Select the appropriate Metrix project you want to run reports for. This manual will use screenshots from the Gulfmed2.pjy project that was set up at the beginning of the tutorial.

Metrix Report Maker will now load your project. Loading does not entail gathering all the data in your project. Instead, Metrix Report Maker gathers the names and Metrix ID numbers of the Sites, Areas and Meters, and a list of Line Items. While loading the data, Metrix Report Maker will produce a list of Sites, Areas and Meters, and place it in the Reports Workbook. The Reports Workbook will be named "Reports 1-29-04.xls" (the date will be the day the reports were generated). **Do not change the Reports Workbook name until you finish creating Reports in that Workbook**. Below are a List of Sites, Areas and Meters that were created by the Metrix Report Maker. The report will look like Figure 5:

Figure 5: Meter Names tab of the Reports Workbook

Add/Remove Data

Once a project has been loaded, the Load Data button will change to display Add/Remove Data. This feature allows you to add additional projects once you have added the first project.

If you need to update a project, you can click the "Add/Remove Data" button and click "OK" for the dialog box that pops up. **NOTE: You need to save your Metrix Project to be able to update the project in Report Maker. Report Maker can only load the changes that have been saved.**

If you have already run a report, it will not delete the reports that have already been created. In this screen, multiple projects may be added at once.

Creating Reports

Once the Metrix Project has been loaded, reports can be created. Click on the Create Reports button on the Front Page, or select Report Wizard from the Metrix Menu.

This will bring up the Report Selector Worksheet. From here, select the type of report that is needed. Once a button is clicked, a wizard takes you through the rest of the report making process. To know more about the different Report Types, go to the Reports Library section of this manual.

We will now make a Compare Years Report which shows some of the most common option menus seen in the Metrix Report Maker.

Note: This tutorial will <u>NOT</u> cover every options menu seen in the Metrix Report Maker. If this tutorial does not have the options menu you are looking for, further information can be found for the report you are creating in the Report Library of this manual.

Click on the Create Reports option from the main menu and double-click on the 'Compare Years' report under the 'Track Usage or Costs' option as seen in Figure 6.
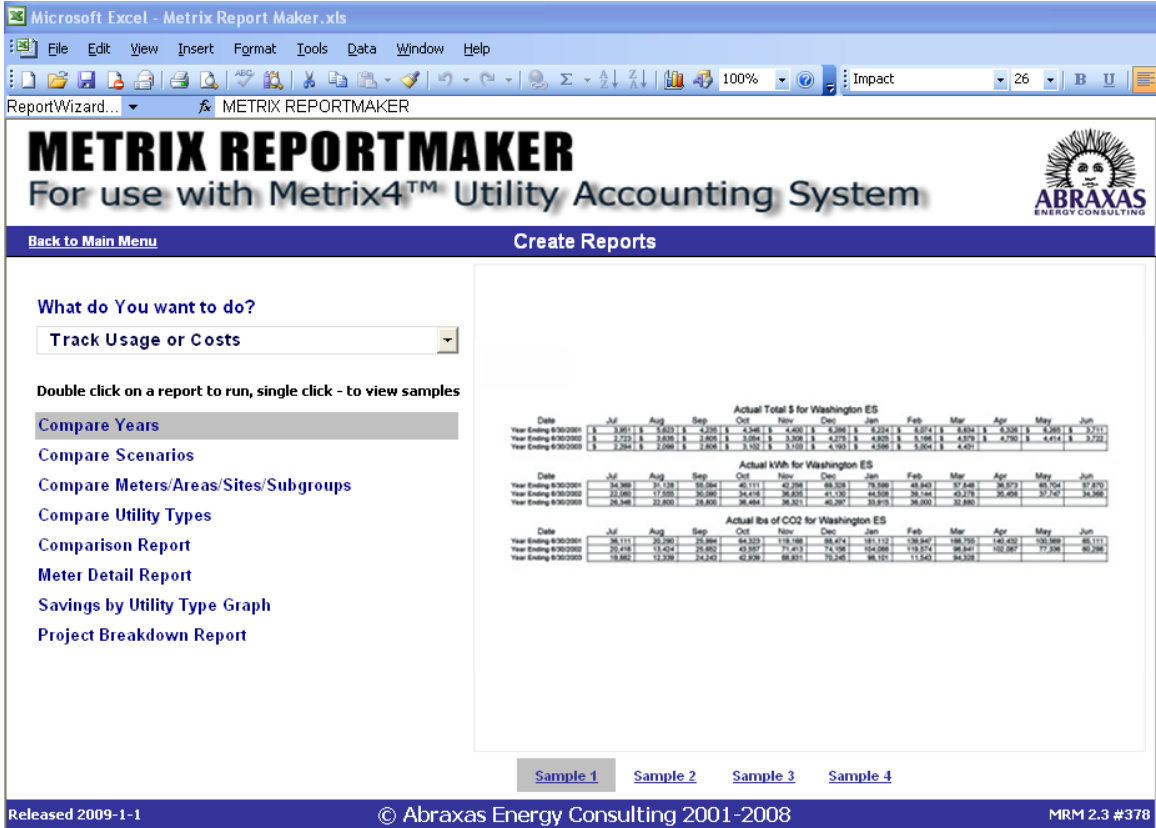
Figure 6: Selecting the Compare Years report

Once the report is selected, the first options menu will appear as seen in Figure 7. This is the Report Parameters box.
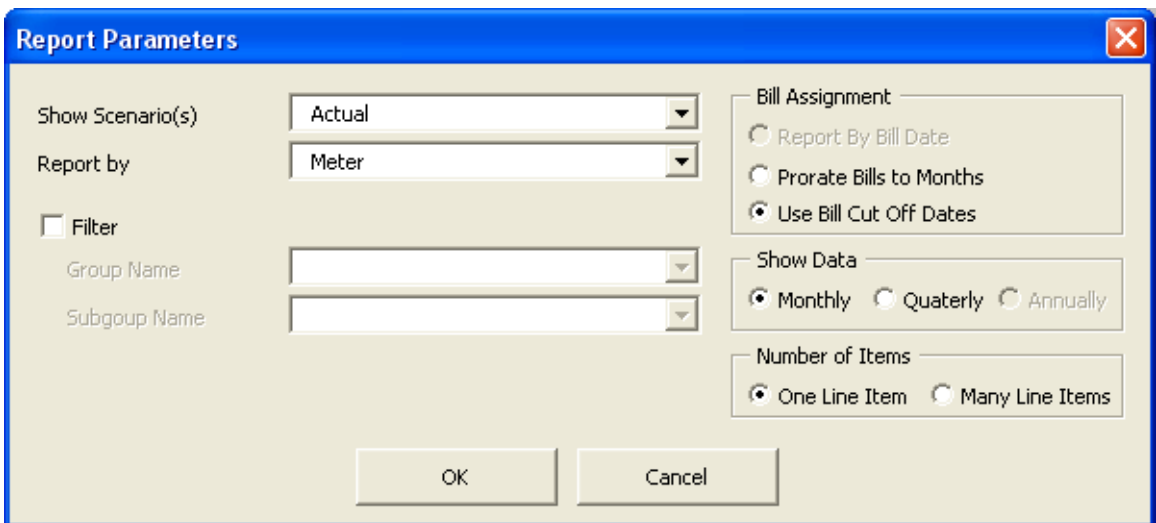
Figure 7: Compare Years Opening Dialog Box

From this menu, we will set the basic parameters for which we want our report to cover. This includes the type of data, where the data comes from, how the data is displayed, and the number of line items that the data will show. The following bullets highlight the options in the menu.

- ❑ The Show Scenario(s) option includes a drop down menu of the types of data to include in the report (Actual, Baseline, SimActual, etc.) We wanted to show the Actual Scenario, so we selected "Actual." Since we are only comparing years, and are not interested in Cost Avoidance, we need to always select Actual for our Scenarios. (Baseline and Target are for Cost Avoidance calculations, and SimActual will be covered elsewhere in this manual.)

- ❑ Below that we have the option of what to Report by. You can report by project, site, area, meter, or Subgroup. We wanted to make the Report at the Meter level, so we selected the Meter from the drop down menu.

- ❑ Data can also be filtered by groups or Subgroups if you have them in your project. Just check the "Filter" box and select the group or Subgroup you want to filter your data by. We do not have groups or Subgroups in this project so the filter option has been left blank.

- ❑ In the top right corner you can select how the bills are reported. The can be reported by bill date, prorated to the months of the year, or reported by the bill cut-off date. We wanted to report on the data using the bill cut-off dates as defined in the Metrix Bill Registers, so we selected the "Use Bill Cut-Off Dates."

- ⊹ The graph can display data monthly, quarterly, or annually. We chose "Monthly" as this is the most common option.

- ⊹ Finally, you can choose the number of line items you want to include in your report. There are two differences between one line and many line items:
  - ○ One Line Item allows for ratios (such as kWh/sq ft or $/Day.
  - ○ One Line Item allows for the chart option 'Embed Chart on Table'.
- ⊹ For this report we are only reporting on a single line item.

After making these selections, we select the **OK** button, and the Single Meter or Every Meter dialog box comes up as in Figure 8:
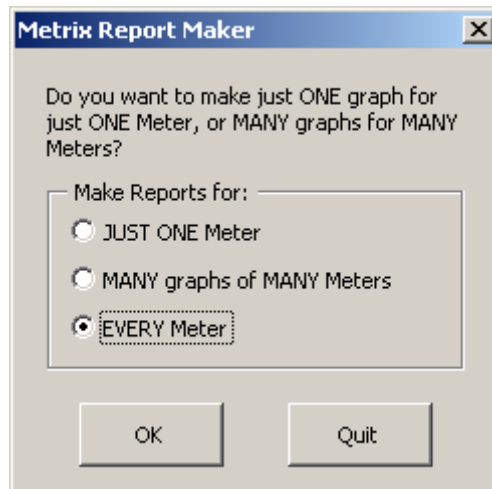
Figure 8: Number of Meter Graphs Selection Dialog Box

You can select how many meters you want to include in your report. If "JUST ONE Meter" or "MANY graphs of MANY Meters" is selected another menu will be displayed asking you to select which meter(s) you want to include in the report. Just select the meters you want and continue to the next menu. Since we want to create reports for all of the Meters in the project, we select "EVERY Meter." The following dialog box in Figure 9 appears:
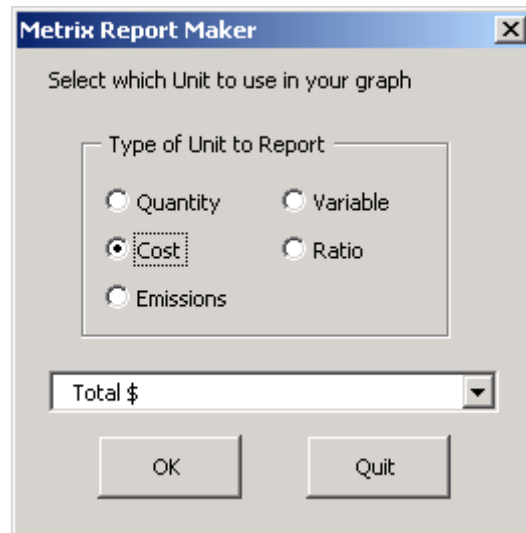
Figure 9: Single Line Item Dialog Box

This is the dialog box to select a Single Line Item. All possible Line Items are listed in this dialog box, and they are categorized into:

❑ Quantity (kWh, kW, Therms, Gallons, Liters, kBtu's, etc…),

❑ Cost (Total $, Tax $, Total Energy $, Gas $, etc.),

❑ Emissions (lbs of CO_2, lbs of SOx, etc.),

❑ Variables (days, area, or user variables)

❑   Ratios ($/day, $/area, kBtu/day, LF, etc.)

Select which line item(s) you want to include in your report and click **OK**. If you selected "Many Line Items" from the first menu the following menu will appear as seen in Figure 10.
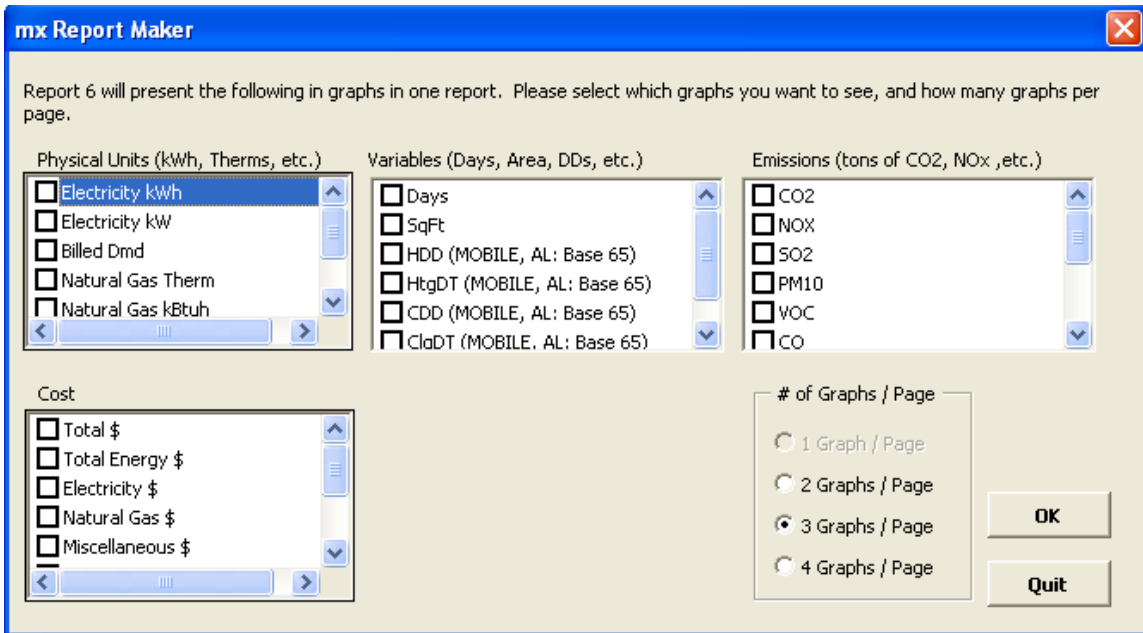
Figure 10: Many Line Items Dialog Box

From this menu, you can select as many line items as you want to include in your report. All of the line items that are in the single line item menu are displayed. Once you select all the line items you want to include, you can choose how many graphs you want to display per page in your report. Click **OK** when you are ready to continue.

Selecting **OK** brought up the Year Selection dialog box as seen in Figure 11:
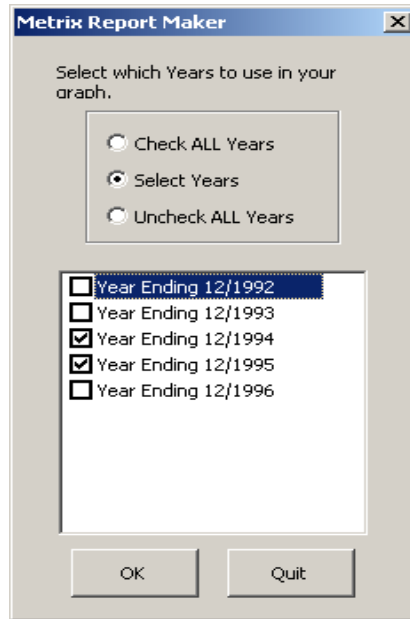
Figure 11: Year Selection Dialog Box

This dialog box displays all available years of data. We may select as many years as desired for this report, these years need not be consecutive. If we select only 2 years, as shown in Figure 11 , we may show the difference between the two years in the graph. Click **OK**, and the next dialog box, Figure 12will come up:
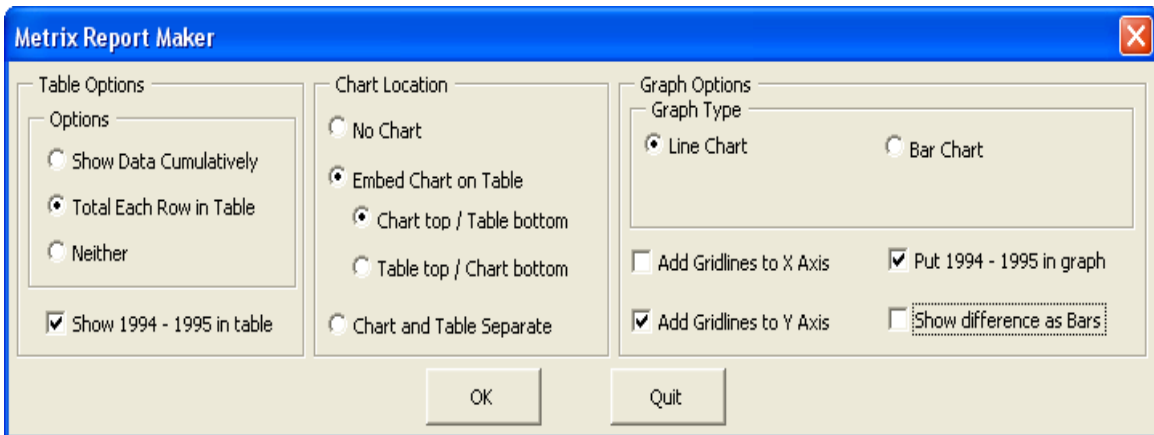
Figure 12: Graph and Table/Chart Options

In this dialog box, we tell the Metrix Report Maker how to make the table and graph.

❑ The first option allows you to select how you want the data in the table to be displayed. You can choose to show the data cumulatively, have the total of each row of data, or have neither and just have individual months of data.

❑ You can also choose where the chart is located on your spreadsheet. You do not have to have a chart at all if all you want is data, the chart can be embedded on the page, or the chart and the table can be separated on two different worksheets.

❑ Depending on the report you are creating, you will have different options on the type of graph that is produced. For this example we have the choice between a line ~~or~~and bar graph. A line graph has been selected.

❑ In the bottom right corner you also have the other graph options. These will vary depending on the report you are making. All reports will include the option to add gridlines to the axes but for this report we have the options to put the years in the graph as well as show the difference between the bars in the chart.

Once we make our selections, we choose **OK**, and the Metrix Report Maker displays the final dialog box asking us if we want to memorize the report as seen in Figure 13.
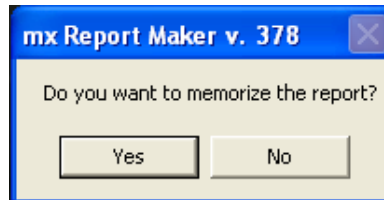
Figure 13: Memorize the Report Dialog Box

Memorizing the report saves the settings you used in the report for future use. If the report you are running is likely to be used again for different data it would benefit the user to memorize the report so they wouldn't have to go through all of the settings again. You will not want to memorize reports if this is a one-time report or if reports are not run that often. To access your memorized reports refer to the 'Fast Reports' section of this manual.

Once we click yes or no we are taken back to the Main Menu and on the bottom of the page it should say 'Report is created.' If it does then congratulations, you have successfully created a report!

Figure 14: Main Menu of Metrix Report Maker

Fast Reports

If you know the exact report you are trying to create, Fast Reports is a good way to save time and energy. Selecting 'Fast Reports' from the Main Menu or from the Metrix Menu opens up the dialog box in Figure 15
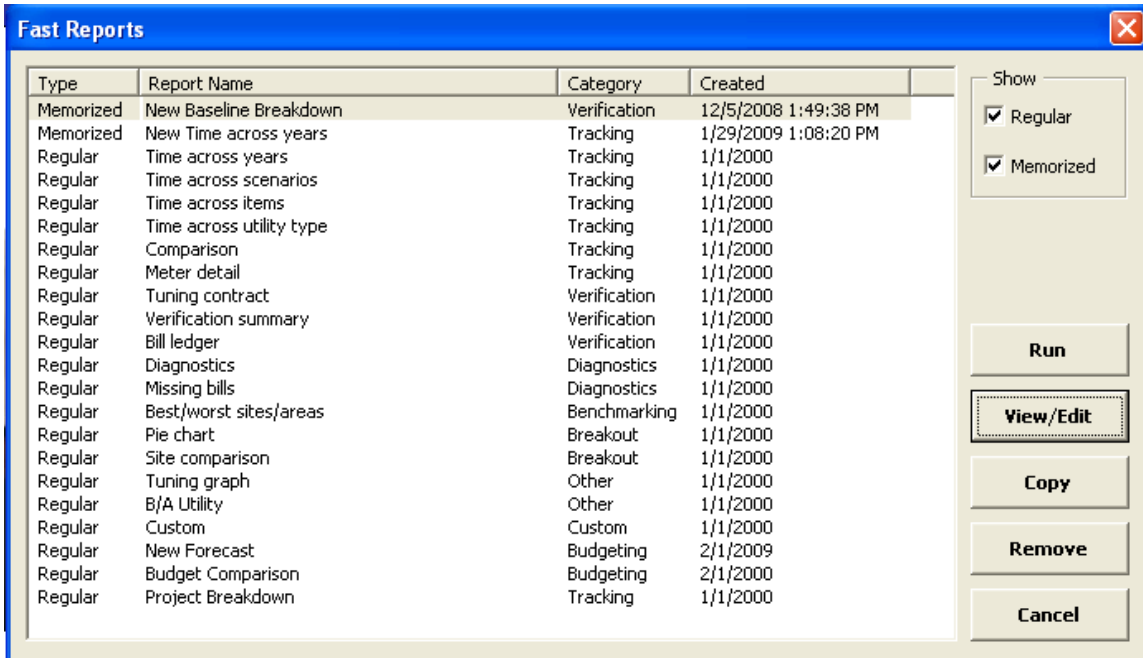
Figure 15: Fast Reports Dialog Box

From the dialog box, the user can select any report from the Metrix Report Maker without going through all of the menus in the Create Reports section. After selecting a report, the user will then go through all of the option menus to customize the type of report they want. Typically, users who are comfortable with the Metrix Report Maker use Fast Reports. If you are just starting out on Report Maker it is suggested to use Create Reports until you become more familiar with the program.

Fast Reports also allows the user to access Memorized Reports created previously. Any report that is created in Report Maker can be memorized for future use. Users would memorize a report if it is commonly used and needed on a consistent basis. . After each report is run, Report Maker will automatically memorize the last report and call it "Last Report". This memorized report is overwritten when a new report is run. When a user selects a memorized report the settings are already determined and the user just has to determine what variable(s) the report will show. Figure 15 shows both Regular and Memorized Reports. The name, category, and creation date are included for each Memorized Report. For more information on memorized reports see the Using Memorized Reports section on page 71 of this manual.

Viewing Reports

To view reports we have created: from the Front Page, we click on the View Reports button, or we can select View Reports from the Metrix Menu. We are then taken to the Reports Worksheet as seen in Figure 16:

Figure 16: Reports Listing

The Reports Worksheet contains the reports' title, description, date created and also any additional notes. To see a report, select a tab in the Reports Workbook, or click on the hyperlink in the List of Reports. If "Data1" is selected, for example, the preceding report in Figure 17Figure 17 will appear.

The formatting can be changed to suit your needs, since the graphs and tables are made in Excel. The graphs and tables can be manipulated manually or automatically with macros.
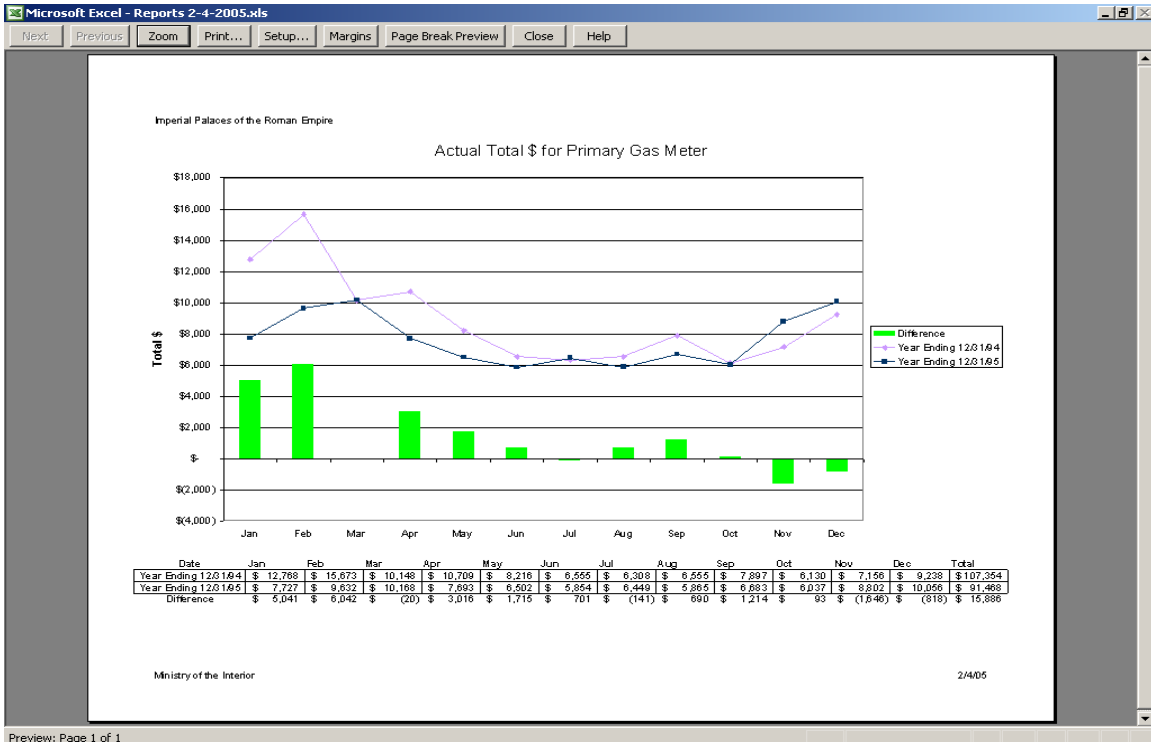
Figure 17: One of Many Report Views - Total $ for Primary Gas Meter

Printing Reports

Rather than printing each report individually, Metrix Report Maker can print one, or many, or all of your reports at the same time. This section is a guide to the report printing process.

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First, select Print Reports from the Main Menu. Or select Print Reports under Metrix in the Toolbar. The Print Reports dialog box will appear as in Figure 18:
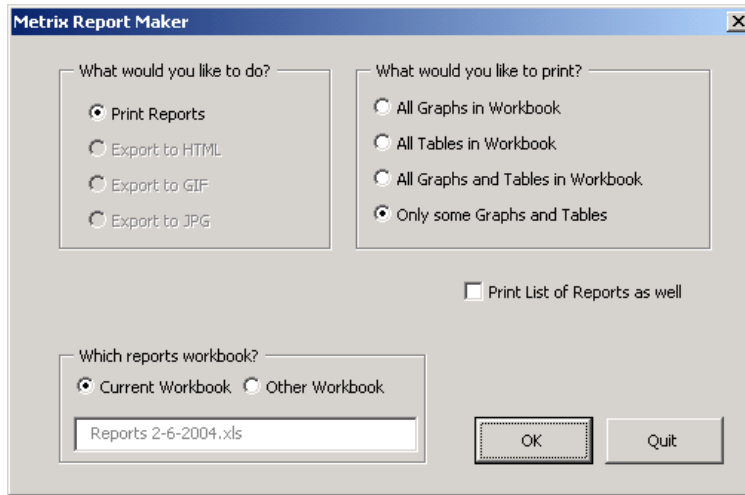
Figure 18: Print Reports Dialog Box

Reports can be printed from the current reports workbook, or a reports workbook that has been previously created. The operator has the choice to print all the graphs, all the tables, all the graphs and tables, or only selected graphs and tables. Checking the Print List of Reports as well check box will print a listing of all reports available.

Select which graphs and tables you wish to print and click okay. If the "only some Graphs and Tables" radio button is selected, followed by "OK", the following dialog box will come up as in Figure 19:
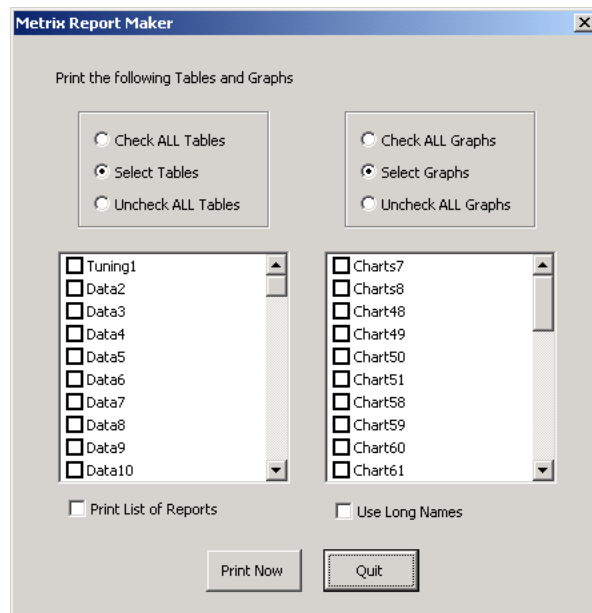
Figure 19: Selecting Tables and Graphs for Printing

Choose which graphs and tables are to be printed and click Print Now to print the selected tables and graphs.

Note: If you are not sure which table Data2 represents, and don't want to cross-reference with the list of reports, click on the Use Long Names checkbox, and reports will be listed by report name, as shown below in Figure 20:
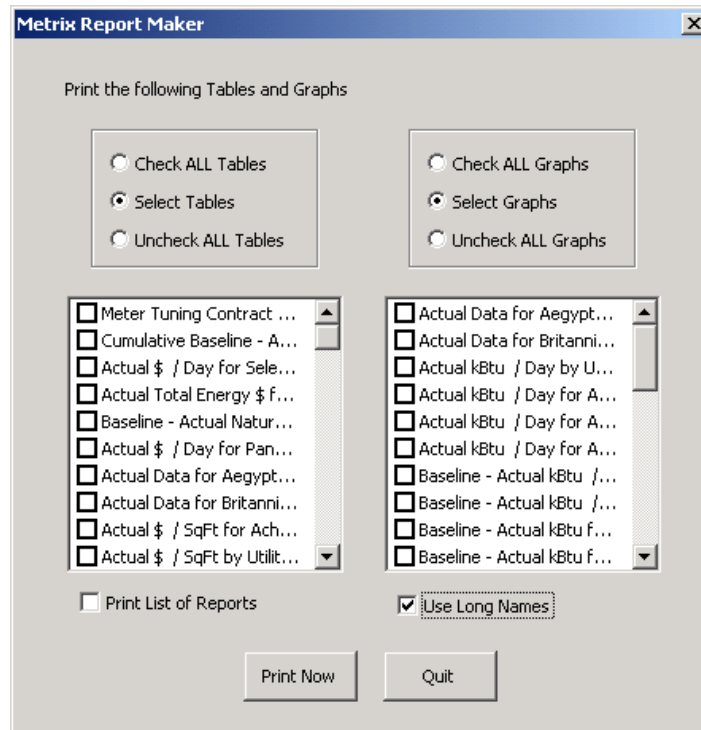
Figure 20: Selecting Reports with Long Names

Exporting Reports

You can also choose to export your tables and charts to html format for publishing on the web. In addition, you can export to jpg and gif formats.

Rather than have to export each report individually, Metrix Report Maker allows you to export one, many or all of your reports at the same time. This section will guide you through the process of exporting your reports.

Suppose you want to export several reports. From the Main Menu, you can select the "Export Reports" button, or you can select from the menu, Metrix | Export Reports.

You will then see the Export Reports dialog box, as shown in Figure 21.
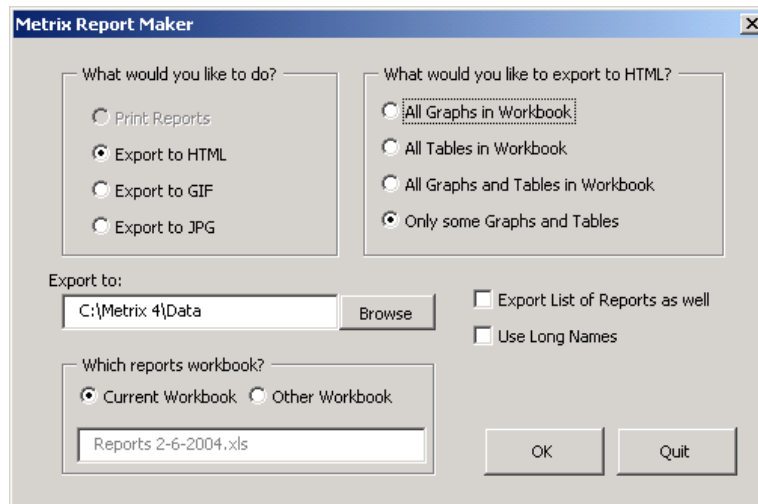
Figure 21: Export Reports Dialog Box

You can export charts and tables from the reports workbook that you were just composing, or you can export charts and tables from previous reports workbooks. To select a previous workbook, you can select the "Other Workbook" radio button. You can then browse and find the reports workbook that you want to export.

You are given the choice to export all the graphs, all the tables, all the graphs and tables, or only selected graphs and tables. You also have the option of exporting the list of reports as well by checking the corresponding box.

If you click on the Use Long Names checkbox the exported files will be named using the Report Names, otherwise, the exported files will be named using the abbreviated names like "data1.jpg"

If you select the "Only some Graphs and Tables" radio button, and then select OK, you will see the dialog box as shown in Figure 22. Here you can choose which graphs and tables you want to export.
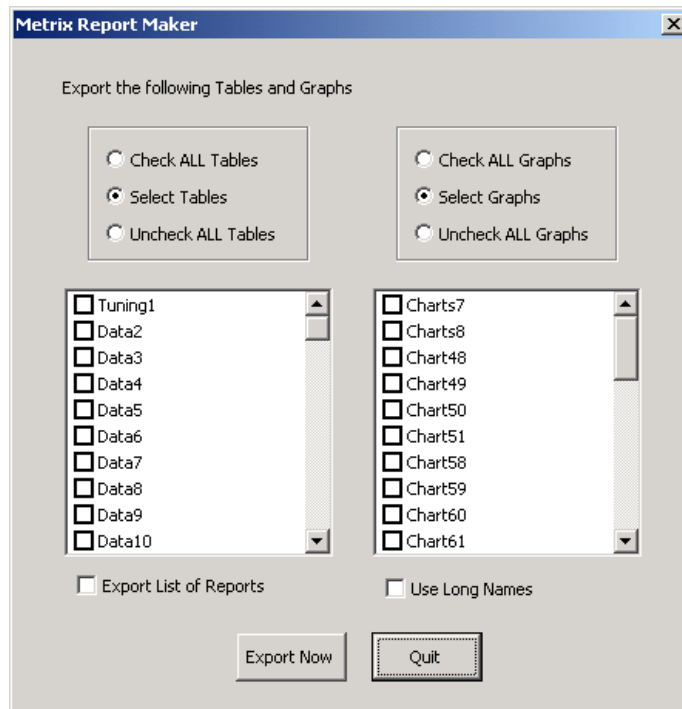
Figure 22: Export Reports Selection Dialog Box

If you are not sure which table Data2 represents, and don't want to have to cross-reference with the list of reports, you can click on the Use Long Names checkbox, and you will see reports listed by report name, as shown below:
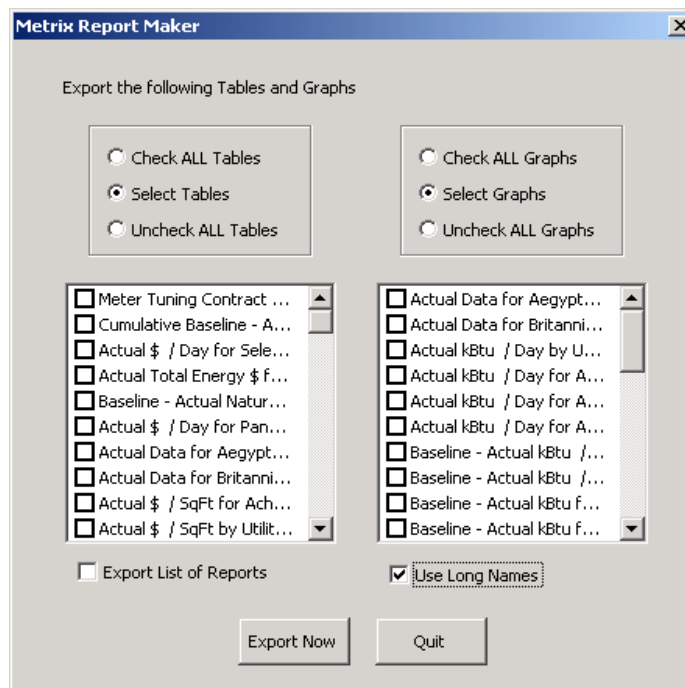
Figure 23: Reports Listed by Name in Export Reports Selection Dialog Box

You can select which tables and graphs you want to export, and click on the "Export Now" button, and the Metrix Report Maker will export the tables and graphs you have selected.

Email Reports

One of the new features built into Metrix Report Maker is the E-mail Reports function. This option can be accessed by simply clicking on the "e-mail Reports" button that is located on the Task List in the Main Menu. This feature allows the user to email multiple reports to different recipients quickly and easily. Figure 24 shows the "e-mail Reports" menu screen.

NOTE- In order to use e-mail Report function you must have a Microsoft Outlook e-mail client set up on your computer and you will not be able to e-mail reports without it.
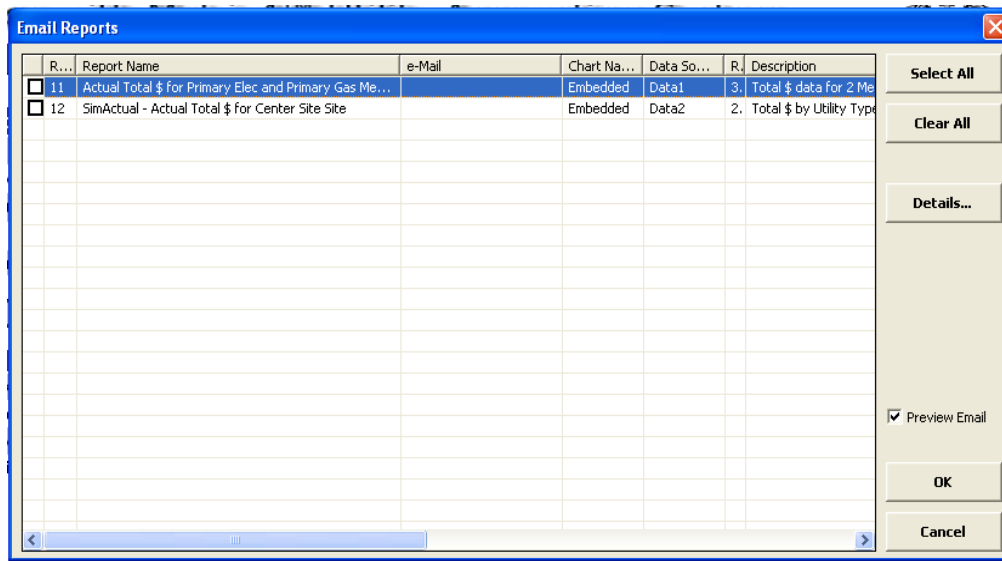
Figure 24: Reports Listed by Name in Email Reports Menu Box

From this menu you must now select which reports you would like to send via email. Reports are selected for sending by clicking on the check box to the left of each Report Name.

There are two ways in which you can designate who receives the Report e-mail.
1. The first way is entering the e-mail address into your Metrix project.
    a. Within your Metrix project, select your project, and then select the "Contact Information" tab.
    b. From this menu shown in Figure 25 you can enter the email address you would like reports to be sent to. The same can be done within your site "Contact Information" tab, this makes it simple to send emails to individual site managers.

Figure 25: Contact Form Used By Email Reports Feature
2. The second way to enter an email address for each report is with the Report Detail form.

a. Once you have created your reports workbook, select the "email reports" option.
b. Double click on any report in your list to open the Report Detail form. Figure 26 shows this form.
c. Within this form you can enter any email you would like the report sent to.

You can also modify things like Report Name and Report Description. Once you have entered the information that you desire to use select "OK." For only Excel 2007 & 2010, there is the option to email a report as a PDF.

Figure 26: Report Detail Form

To preview email select the OK button from the Email Reports Menu, this will then open up a new message in your default e-mail client with the report attached. If you have selected to send multiple reports then multiple new email windows will open up. Once the individual email windows have opened you will be able to add any CCs or BCCs that may be necessary.

Don't forget to click "Send" on your email client or your reports will just sit there in your Drafts until you do.

Web Reports

The Web Reports feature allows you to put your reports online so that your customers will have easy access to them. Reports can currently be uploaded as an Excel file or as a PDF file with Excel 2007 or later. The reports can be password protected and you can choose what reports can be seen by which customer.

When you go to open Web Reports for the first time, you will be prompted for a username and password. The username and password are your login information for your Abraxas Energy account. If you do not have an account, you can sign up at

https://www.abraxasenergy.com/energytoolbox/login.php.

The 'remember password' option will remember the password as long as you have Report Maker installed on your computer. If you would like to modify this field and "remember password" has been selected, this can be done by reinstalling Report Maker and resetting all values.

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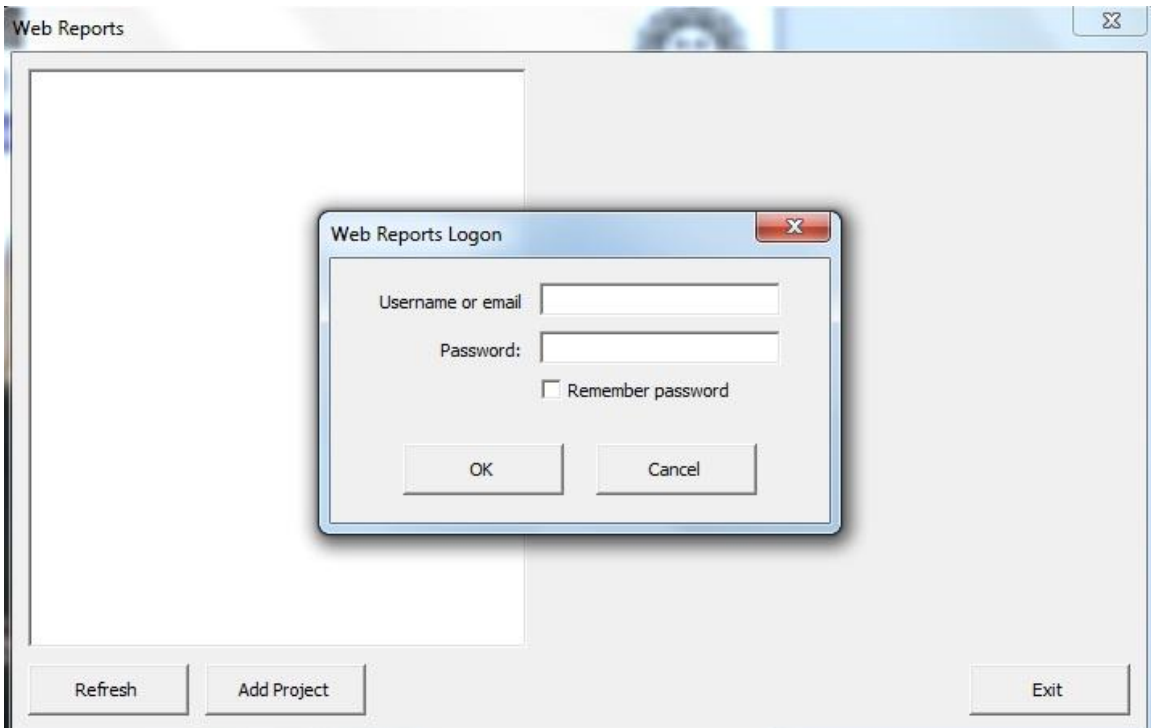
Figure 27: User Login seen after using Web Reports

The web reports menu can be seen in Figure 28. On the left hand panel is where the projects are displayed. These can be updated to reflect different customers or any other way that you choose to organize the groups. To add a project, click on the button at the bottom of the screen 'Add Project'.
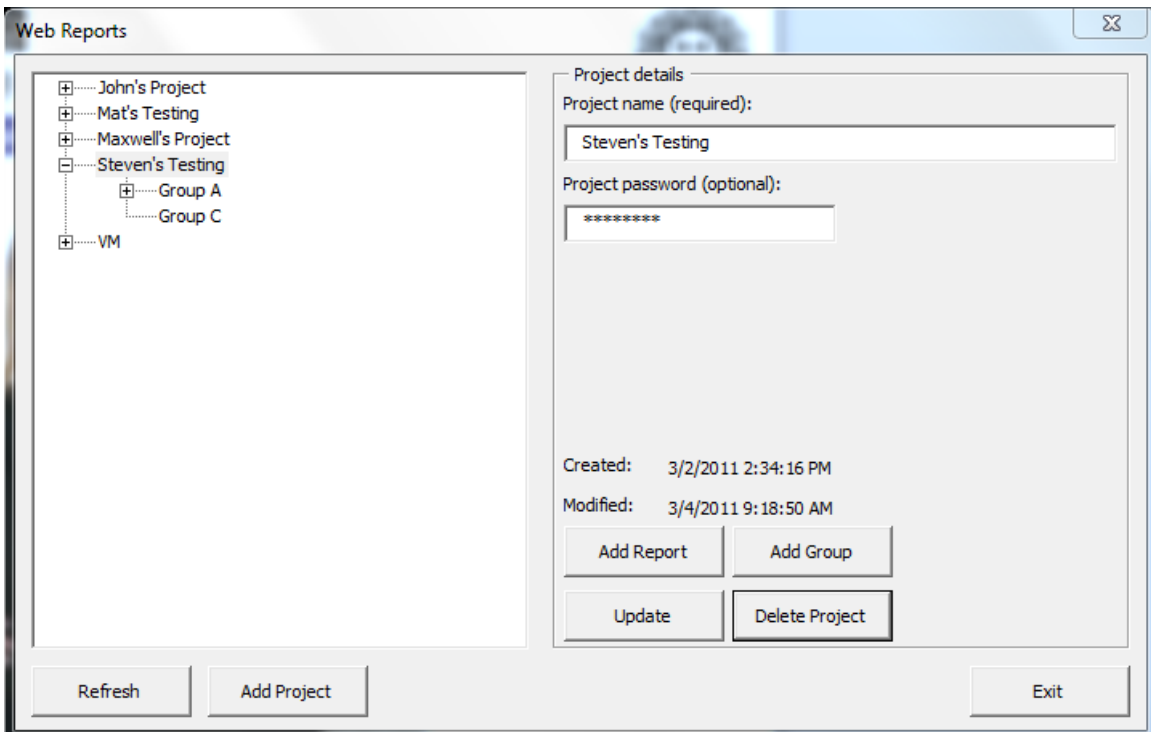
Figure 28: Web Reports Main Menu

Below the project options are the different groups. These can be used for different types of reports, such as savings and benchmarking. Of course, how you choose to use these groups is up to you. To add a group, select the project you want to add the group to and click 'Add Group'.

To upload a report to the website, you can upload the current file you are working with or the file that is currently open in Metrix Report Maker. To add a report, select the project that you want the report to appear under and click 'Add Report'. After you click 'Add Report', the window in Figure 29 will pop-up that will allow you to choose between:

- **Active Report Book**: uploading from the Report that is currently open in Metrix Report Maker
- **Select a File:** selecting a previously created report that was previously created in Metrix Report Maker
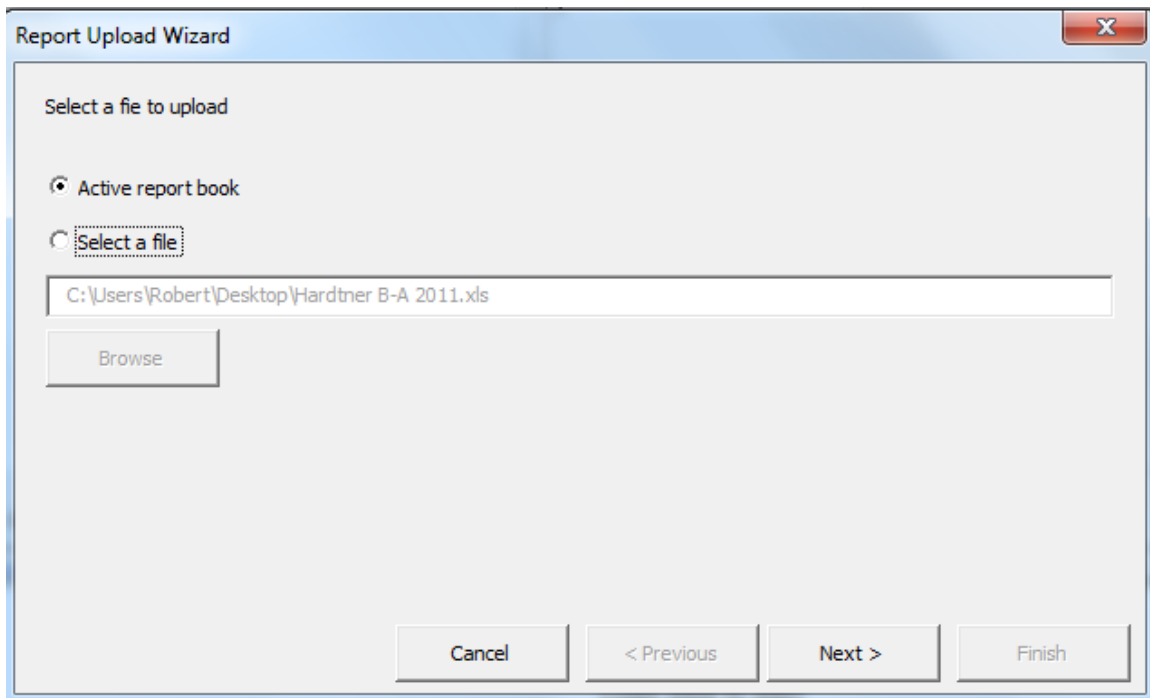
Figure 29: Web Report File Upload

In the next dialog box, you will be prompted for one of three upload options:

- **Upload as workbook:** Upload all worksheets in the report including the List of Reports page and items page
- **Upload all reports:** Upload all worksheets that contain reports
- **Select reports to upload:** Upload one to all of the reports as individual reports. You will be able to select the reports on the next screen

The following dialog box, shown in Figure 30, shows the two upload options:

- **Upload each report separately**: This option allows you to upload each individual report as a separate file. If there are 4 reports in the report workbook, then each of the 4 reports will be available for download separately.
- **Upload single file**: All reports will be uploaded as one file, thus the downloader can download the entire workbook as one file.
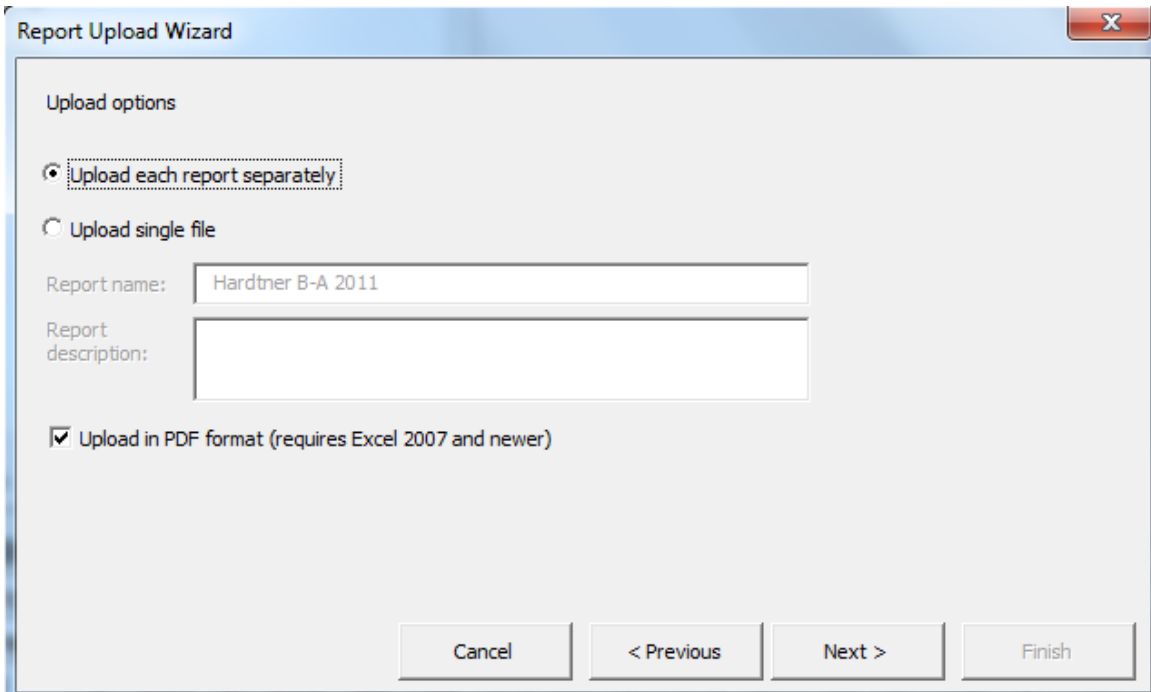
Figure 30: Upload Options

The last option that you will have will allow you to upload to choose the project and group the report(s) will be uploaded to. After you have selected the options you desire, click 'Finish'.

Reports Library

The Metrix Report Maker can make a large variety of charts and tables in Excel. Because there are so many options available, we will not attempt to show all the reports options available here, however, we can present the basic report types and list what options are available

Track Usage or Costs

Tracking Reports track consumption, demand, costs, variables, emissions, and ratios over time. Types of Tracking Reports include Time Across reports and also Comparison and Meter Detail reports.

Time Across reports are a type of tracking report in which time is presented across the page in tables, and in the x-axis of charts. There are 4 types of Time Across reports, which are listed below. All Time Across reports show physical units, cost units, variables, ratios or emissions vs. time for each of the variable types listed below.

Table 2: Time Across Report Types

Time Across Type	Description
Compare Years	One row in the table per Year, and one line or bar in the chart per Year.
Compare Scenarios	One row in the table per Scenario, and one line or bar in the chart per Scenario.
Compare Items (Meters/Areas/Sites/Subgroups)	One row in the table per Item, and one line or bar in the chart per Item. (An "Item" represents a Site, Area or Meter.)
Compare Utility Types	One row in the table per Utility Type, and one line or bar in the chart per Utility Type.

Compare Years

The Compare Years report compares usage, demand, costs, variables, emissions or ratios across several years. If you choose to compare just 2 years, Compare Years will also enable you to incorporate the difference and the % difference into your graph and table. In the example in Figure 31, the chart is embedded into the worksheet, and the % difference is not listed.

Actual $ / Day for Pannonia Site

Date	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Year Ending 6/30/02	$ 13	$ 59	$ 21	$ 82	$ 93	$ 88	$ 82	$ 184	$ 179	$ 146	$ 99	$ 118
Year Ending 6/30/03	$ 80	$ 57	$ 85	$ 145	$ 124	$ 165	$ 150	$ 156	$ 133	$ 50		
Difference	$ (67)	$ 2	$ (65)	$ (63)	$ (31)	$ (77)	$ (67)	$ 28	$ 47	$ 96	$ 99	$ 118
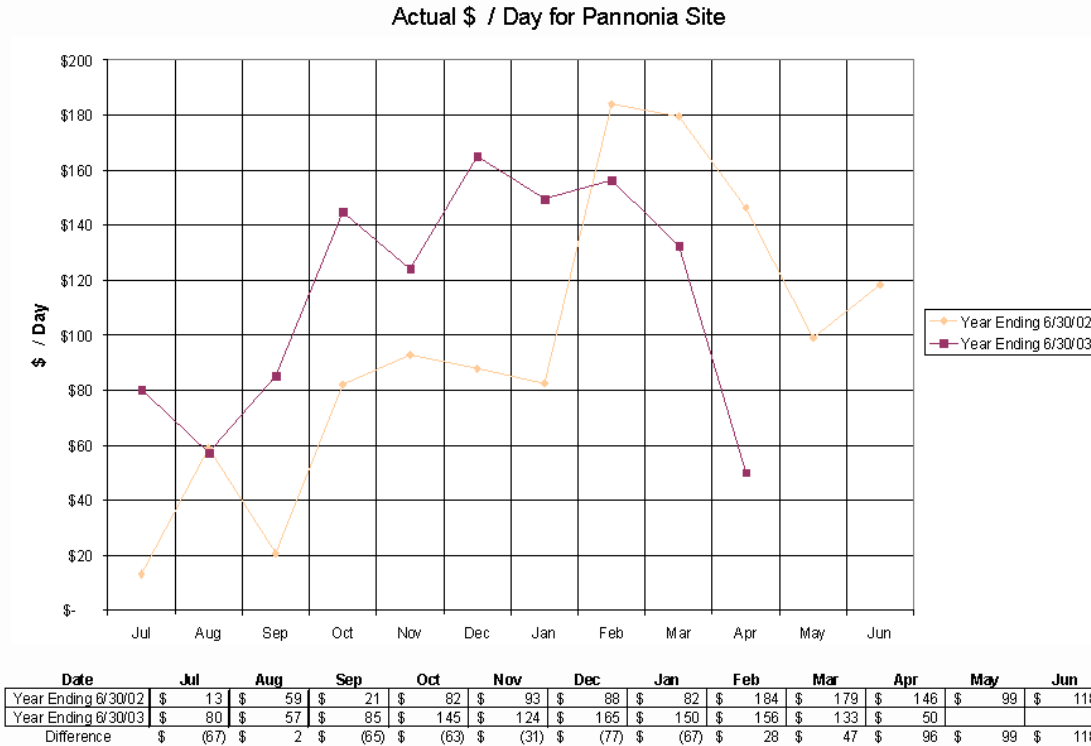
Figure 31: Compare Years Report

In addition, you can make a report that displays many line items compared over the years. This report type will give you a page with 2, 3 or 4 charts per page, and a separate worksheet with the tables of data. This can be done by selecting Many Line Items in the Report Parameters menu and selecting which variables you wish to chart. The "Create Reports" section contains an example of how to do this. A chart worksheet is shown in Figure 32 on the next page.
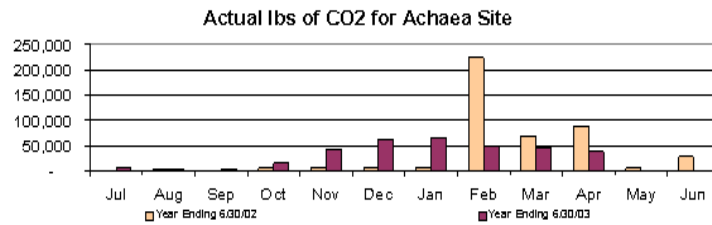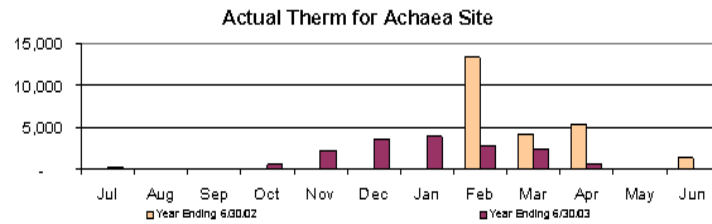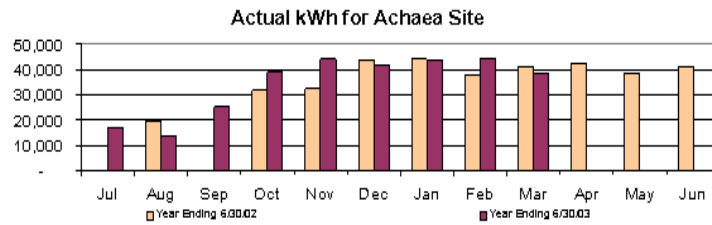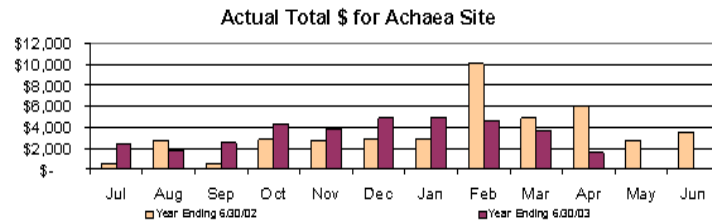
Figure 32: Several Line Items Compare Years Report

Note: Reports that show charts of several line items on one worksheet are presently available only for Compare Years and Compare Scenarios reports.

Compare Scenarios

The Compare Scenarios Report allows you to compare various scenarios (Baseline, Actual, SimActual and Target), and would likely be used for Cost Avoidance. In this case, we compared Baseline and Actual. The differences between Baseline and Actual (Baseline – Actual) as shown in the chart and the table are optional. The difference can be shown as either a bar or line. In Figure 33Figure 33 we chose to graph the difference as a line. With Compare Scenarios, you can also list the different scenarios, Baseline/SimActual/Actual/Target.
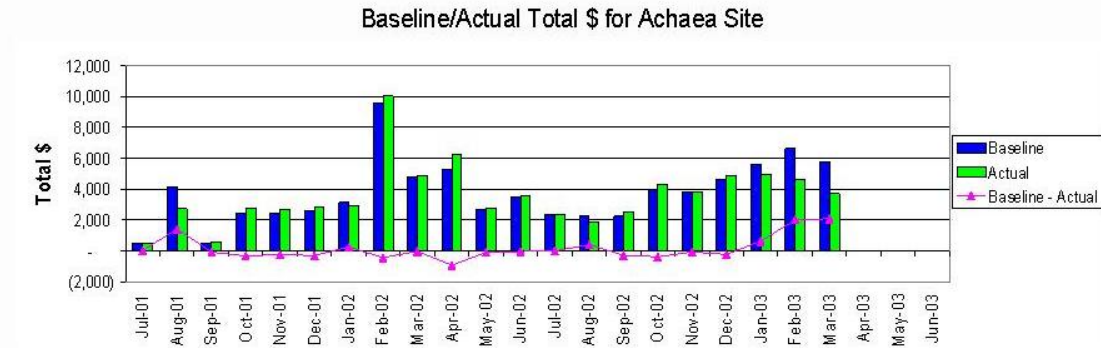
Year Ending 6/30/2002

Scenario	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Baseline	$500	$4,142	$511	$2,452	$2,447	$2,578	$3,144	$9,609	$4,831	$5,293	$2,689	$3,511
Actual	$475	$2,724	$582	$2,785	$2,674	$2,879	$2,885	$10,042	$4,859	$6,222	$2,773	$3,552
Baseline - Actual	$25	$1,418	-$71	-$333	-$227	-$301	$259	-$433	-$28	-$929	-$84	-$41
Savings	4.9%	34.2%	-13.8%	-13.6%	-9.3%	-11.7%	8.2%	-4.5%	-0.6%	-17.5%	-3.1%	-1.2%

Year Ending 6/30/2003

Scenario	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Baseline	$2,355	$2,261	$2,245	$3,944	$3,787	$4,648	$5,605	$6,629	$5,806			
Actual	$2,348	$1,849	$2,519	$4,321	$3,850	$4,879	$4,974	$4,613	$3,712			
Baseline - Actual	$7	$412	-$274	-$377	-$63	-$231	$631	$2,016	$2,094			
Savings	0.3%	18.2%	-12.2%	-9.6%	-1.7%	-5.0%	11.3%	30.4%	36.1%			

Figure 33: Compare Scenarios Report

There is one additional options menu that is not covered in the "Create Reports" section of this manual. This options menu allows you to choose the time interval of data and is shown in Figure 34.
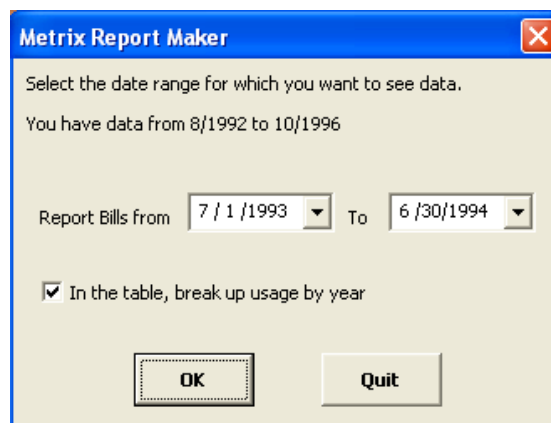
Figure 34: Time Interval Dialog Box

Using this menu you can select from which dates you want to use bills for to compare scenarios. You also have the option to break up your table by year if you want. Once you have chosen the time period you want click **OK** and continue the project setup.

Compare Meters/Areas/Sites/Subgroups

This Compare Items Report compares Sites, Areas, Meters, or Subgroups and can be a valuable report to find out which locations are not saving energy. You can select the scope of which you want your data to come from whether from an individual meter or an entire site. As shown in Figure 35, we can easily see which Sites have Cost Avoidance and which have increased their energy costs.

Site	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02
Aegyptus	$ 1,514	$ 2,011	$ 2,527	$ 2,571	$ 1,759	$ 1,307	$ 1,281	$ 1,238	$ 650	$ 340	$ 235	$ (466)
Belgica	$ (1,054)	$ (2,201)	$ (2,749)	$ (4,545)	$ (5,835)	$ (7,160)	$ (8,941)	$ (8,082)	$ (10,615)	$ (12,703)	$ (13,899)	$ (16,492)
Bithynia et Pontus	$ 186	$ (354)	$ (843)	$ (5)	$ (1,639)	$ (3,278)	$ (1,484)	$ (978)	$ (2,411)	$ (4,704)	$ (4,666)	$ (5,504)
Cappadocia	$ 70	$ (183)	$ (289)	$ (440)	$ (919)	$ (1,194)	$ (1,537)	$ (1,641)	$ (2,052)	$ (1,932)	$ (1,546)	$ (1,592)
Cyrenaica	$ (153)	$ (427)	$ (738)	$ (874)	$ (901)	$ (796)	$ (30)	$ 669	$ 193	$ (177)	$ (500)	$ (944)
Thrace	$ 301	$ 561	$ 766	$ 889	$ 328	$ 121	$ 390	$ 377	$ (50)	$ (361)	$ (148)	$ (63)
Total	$ 864	$ (593)	$ (1,325)	$ (2,403)	$ (7,207)	$ (11,001)	$ (10,321)	$ (8,416)	$ (14,286)	$ (19,536)	$ (20,524)	$ (25,062)

Figure 35: Compare Meters/Areas/Sites/Subgroups Report

You can run a variety of other reports just like this one comparing different meters and locations both on a monthly or annual basis. The setup of these reports closely follows the example presented in the "Create Reports" section of this manual. However, you can also choose the time interval of bills to include in your data. A description of this menu is provided in the "Compare Scenarios" section at the bottom of the page.

Compare Utility Types

You can break out your reports by Utility Type as well. This report allows the user to compare the cost or consumption for each utility type against one another. The Compare Utility Type report allows you to create line charts, stacked bar charts, or stacked area charts. Here we present the stacked bar chart in Figure 36.

Actual $ / SqFt by Utility Type for Achaea Site

	Year Ending 6/30/02	Year Ending 6/30/03
Electric	$ 0.392	$ 0.450
Fuel Oil	$ 0.010	$ 0.027
Natural Gas	$ 0.324	$ 0.182
Water	$ 0.127	$ 0.122
Total	$ 0.852	$ 0.781
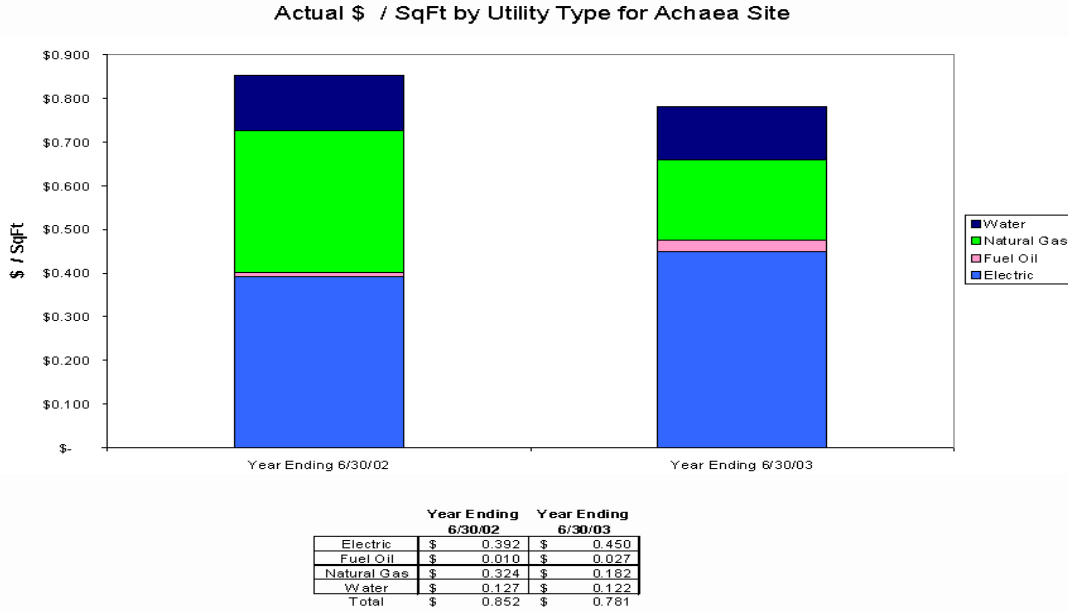
Figure 36: Compare Utility Types Report Shown in Stacked Bar Format

As you can see from the graph, it is very easy to see the differences in cost for each utility between the two years. With three different types of graphs you can choose the one that best displays the information of each utility. This makes it easier to determine which utility is costing you more and thus allows you to adjust usage and save money.

The setup of these reports closely follows the example presented in the "Create Reports" section of this manual. However, you can also choose the time interval of bills to include in your data. A description of this menu is provided in the "Compare Scenarios" section at the bottom of the page.

Comparison Report

The Comparison Report is a table that compares scenarios across the page for a time interval. These scenarios allow you to compare a multitude of different things for a project whether it be differences in utility types, differences in cost of various sites or the savings difference at each site. There is no chart associated with the Comparison Report just a table like the one seen in Figure 37.

Comparison Report for Selected Sites

This report displays bills from 1/1/02 to 12/31/02.

Site	Utility	Baseline Cost		Actual Cost		Savings		% Savings
Achaea								
	Electric	$	25,921	$	26,304	$	(383)	-1.5%
	Fuel Oil	$	-	$	437	$	(437)	0.0%
	Natural Gas	$	14,771	$	16,055	$	(1,284)	-8.7%
	Water	$	6,766	$	7,052	$	(286)	-4.2%
		$	47,457	$	49,848	$	(2,391)	-5.0%
Aegyptus								
	Electric	$	22,108	$	22,112	$	(4)	0.0%
	Fuel Oil	$	-	$	1,769	$	(1,769)	0.0%
	Natural Gas	$	16,386	$	13,978	$	2,408	14.7%
	Water	$	5,300	$	5,236	$	64	1.2%
		$	43,795	$	43,095	$	700	1.6%
Arabia Nabataea								
	Electric	$	23,619	$	23,654	$	(35)	-0.1%
	Fuel Oil	$	-	$	1,373	$	(1,373)	0.0%
	Natural Gas	$	16,344	$	16,889	$	(545)	-3.3%
	Water	$	6,405	$	5,943	$	462	7.2%
		$	46,368	$	47,859	$	(1,491)	-3.2%
Belgica								
	Electric	$	118,674	$	125,748	$	(7,074)	-6.0%
	Fuel Oil	$	-	$	4,438	$	(4,438)	0.0%
	Natural Gas	$	77,788	$	79,517	$	(1,729)	-2.2%
	Water	$	15,621	$	14,000	$	1,621	10.4%
		$	212,083	$	223,703	$	(11,620)	-5.5%

Figure 37: Comparison Report

When making a Comparison Report, you can select which scenarios you want to see, and whether you want to see usage, demand or costs. If you choose two scenarios, you can choose whether you want to view the difference or the % difference. In addition, this report allows you to track Baseline without any baseline modifications.

This report has a different setup than anything that has been covered in this manual. You will encounter different dialog boxes when you make the Comparison Report. The first box will ask you where you want to pull your bills from as seen in Figure 38.
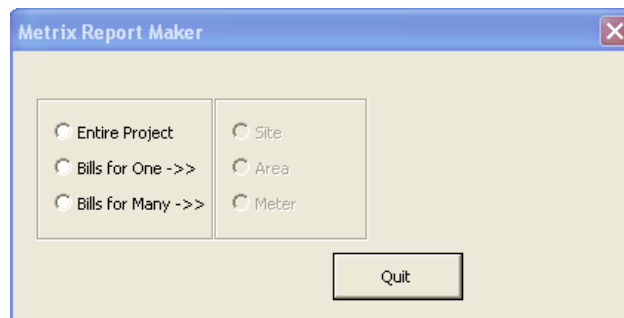
Figure 38: Bill Selection Area Dialog Box

From this menu you can choose to include bills from the entire project, from a single site, area, or meter of from multiple sites, areas, and meters. Once you have selected where you want your bill data to come from click **OK** and the next dialog box will appear as seen in Figure 39.
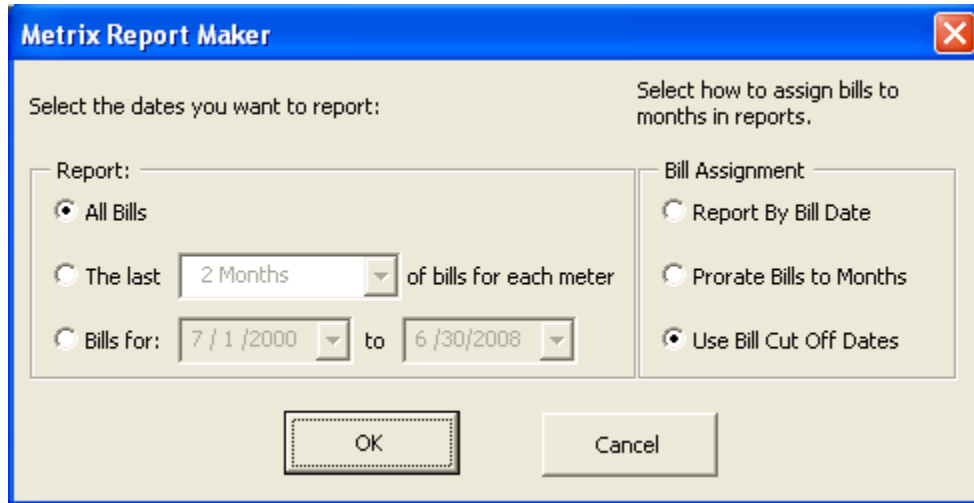
Figure 39: Bill Selection Dialog Box

Now that you have selected where you want your bills to come from it is time to decide which bills to include in the report. On the left side of this menu you can choose to include all the bills from this area, bills over the last several months, or bills over a specific time range. Once you have the bills you want selected, the right side of the menu allows you to select how to assign those bills to months. This can be done either by bill date, proration to each month, or by bill cutoff date. After you make your selections click **OK** and the menu seen in Figure 40 will come up.
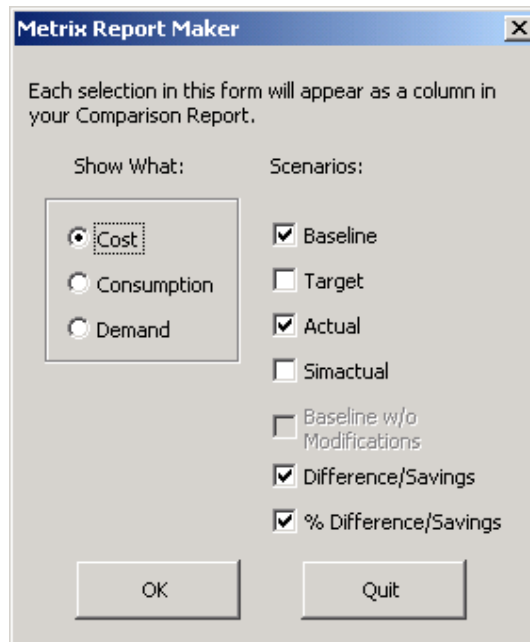
Figure 40: Comparison Report Unit and Scenario Selection Dialog Box

This menu allows you to choose what information is shown in your table whether it be your cost, consumption or demand. From there you can choose which scenario you want of that data whether it is the Actual, Baseline, Target, or SimActual. If you select two of these then you will also have the option to show the difference in savings either as a whole number or a percent.

Once you have selected the information you want in the table click **OK** and the last menu will appear. This menu allows you to aggregate your data into Fuel Types, Areas, or Meters, and will group your data by Site or Area, and allow you create subtotals and grand totals, as shown in Figure 41.
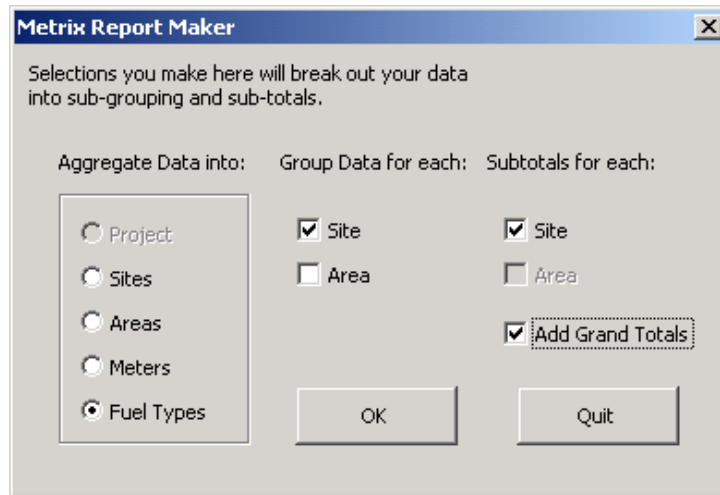
Figure 41: Comparison Report Items Selection Dialog Box

Meter Detail Report

The Meter Detail Report presents the most cost avoidance information in one place. This report displays a reference year of bills that have already occurred. From this you can compare a year in the future and determine whether you are saving or losing money via the information in the table relating to your Baseline usage and your Actual usage. All of the information is presented in a table that looks like the one seen in Figure 42.

Meter Detail Report

Reference: Actual usage & costs for past year.
Actual: Actual usage and costs for current year.

Baseline: Current usage & costs based upon historic patterns of utility use.

Meter: Panama Electric

Reference

|	Jan-95	Feb-95	Mar-95	Apr-95	May-95	Jun-94	Jul-94	Aug-94	Sep-94	Oct-94	Nov-94	Dec-94
Month Use	4,162	6,937	2,976	2,349	2,824	3,497	2,722	3,067	2,941	2,766	2,875	3,317
YTD Use	4,162	11,099	14,075	16,424	19,248	22,745	25,467	28,534	31,475	34,241	37,116	40,433
Meter Demand	20	21	22	23	24	13	14	15	16	17	18	19
Month $	$ 312	$ 500	$ 231	$ 185	$ 218	$ 272	$ 213	$ 238	$ 229	$ 216	$ 224	$ 254
YTD $	$ 312	$ 812	$ 1,043	$ 1,228	$ 1,446	$ 1,718	$ 1,930	$ 2,168	$ 2,397	$ 2,613	$ 2,836	$ 3,091
BP Length	29	28	28	31	32	29	29	32	31	32	29	34
HtgDD	684	846	446	211	90	14	-	-	17	148	275	590
ClgDD	-	-	3	73	176	374	466	405	260	63	18	4
Month Rate	$ 0.075	$ 0.072	$ 0.078	$ 0.079	$ 0.077	$ 0.078	$ 0.078	$ 0.078	$ 0.078	$ 0.078	$ 0.078	$ 0.077
YTD Rate	$ 0.076	$ 0.076	$ 0.076	$ 0.076	$ 0.076	$ 0.076	$ 0.076	$ 0.076	$ 0.076	$ 0.076	$ 0.076	$ 0.076

Baseline

	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99
Month Use	3,421	3,747	3,073	2,286	2,605	2,126	2,827	2,336	2,556	2,543	3,440	3,752
YTD Use	3,421	7,168	10,241	12,527	15,133	17,258	20,085	22,421	24,977	27,520	30,961	34,713
Meter Demand	8	9	10	11	12	12	3	3	4	5	6	7
Month $	$ 267	$ 297	$ 244	$ 182	$ 204	$ 175	$ 233	$ 192	$ 210	$ 205	$ 276	$ 297
YTD $	$ 267	$ 565	$ 809	$ 990	$ 1,195	$ 1,369	$ 1,602	$ 1,794	$ 2,004	$ 2,209	$ 2,484	$ 2,781
Month Rate	$ 0.078	$ 0.079	$ 0.079	$ 0.080	$ 0.078	$ 0.082	$ 0.082	$ 0.082	$ 0.082	$ 0.080	$ 0.080	$ 0.079
YTD Rate	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080

Actual

	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99
Month Use	4,515	3,869	3,807	3,683	4,749	4,546	5,374	6,869	4,879	3,605	3,746	4,286
YTD Use	4,515	8,384	12,191	15,874	20,623	25,169	30,543	37,412	42,291	45,896	49,642	53,928
Meter Demand	68	69	70	71	72	73	74	75	76	77	78	79
Month $	$ 353	$ 307	$ 302	$ 293	$ 372	$ 374	$ 442	$ 565	$ 401	$ 290	$ 300	$ 339
YTD $	$ 353	$ 660	$ 962	$ 1,255	$ 1,627	$ 2,001	$ 2,443	$ 3,008	$ 3,409	$ 3,699	$ 3,999	$ 4,338
BP Length	29	28	28	31	32	29	29	32	31	32	29	34
HtgDD	651	522	573	214	109	6	5	-	24	180	388	720
ClgDD	1	-	-	98	115	270	392	614	292	91	5	-
Month Rate	$ 0.078	$ 0.079	$ 0.079	$ 0.080	$ 0.078	$ 0.082	$ 0.082	$ 0.082	$ 0.082	$ 0.080	$ 0.080	$ 0.079
YTD Rate	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080	$ 0.080

Actual vs. Baseline

	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99
Month Use	32.0%	3.3%	23.9%	61.1%	82.3%	113.9%	90.1%	194.0%	90.9%	41.8%	8.9%	14.2%
YTD Use	32.0%	17.0%	19.0%	26.7%	36.3%	45.8%	52.1%	66.9%	69.3%	66.8%	60.3%	55.4%
Meter Demand	742.4%	676.6%	605.2%	533.3%	471.8%	523.2%	3315.4%	2658.6%	1732.2%	1441.4%	1170.8%	994.4%
Month $	32.0%	3.3%	23.9%	61.1%	82.3%	113.9%	90.1%	194.0%	90.9%	41.8%	8.9%	14.2%
YTD $	32.0%	16.9%	19.0%	26.7%	36.2%	46.1%	52.5%	67.7%	70.1%	67.5%	61.0%	56.0%
HtgDD	-4.9%	-38.3%	28.4%	1.7%	21.2%	-60.7%			75.8%	22.0%	40.9%	22.1%
ClgDD			-100.0%	34.5%	-34.5%	-27.8%	-16.0%	51.7%	12.3%	44.8%	-74.3%	-100.0%

Use Avoidance

	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99
Month Use	(1,094)	(122)	(734)	(1,397)	(2,144)	(2,420)	(2,547)	(4,533)	(2,323)	(1,062)	(306)	(534)
YTD Use	(1,094)	(1,216)	(1,950)	(3,347)	(5,490)	(7,911)	(10,458)	(14,991)	(17,314)	(18,376)	(18,681)	(19,215)

Cost Avoidance

	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99
Month $	$ (86)	$ (10)	$ (58)	$ (111)	$ (168)	$ (199)	$ (209)	$ (373)	$ (191)	$ (85)	$ (24)	$ (42)
YTD $	$ (86)	$ (95)	$ (153)	$ (265)	$ (432)	$ (632)	$ (841)	$ (1,214)	$ (1,405)	$ (1,490)	$ (1,515)	$ (1,557)

Figure 42: Meter Detail Report

This report has one options menu that has not been seen up to this point and it is displayed in Figure 43. This menu allows you to either have Report Maker use the first 12 months of the tuning period or select a 12 month year that will be your reference year for the report. You can also choose whether to compare your Actual or SimActual usage to the Baseline data.
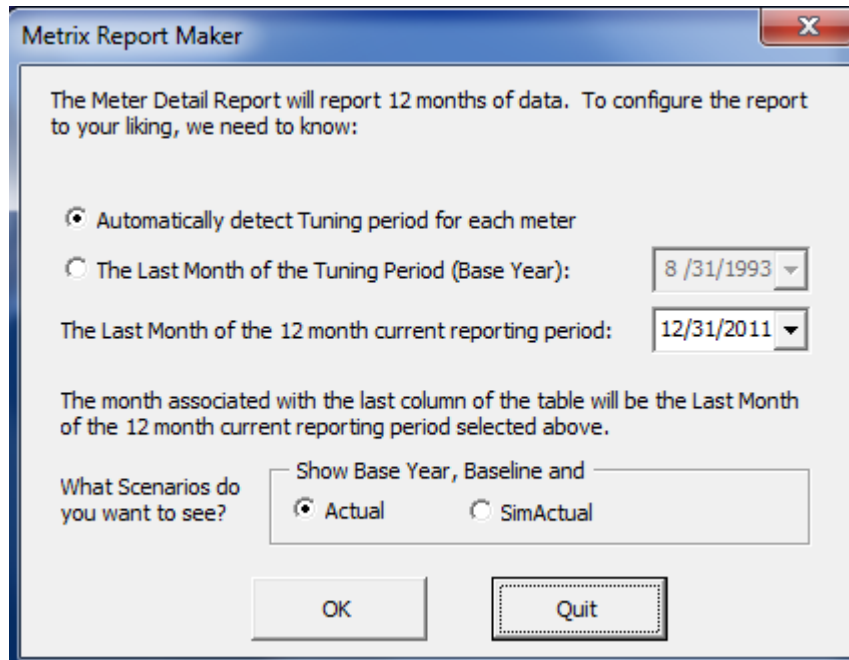
Figure 43: Meter Detail Report Dialog Box

Savings by Utility Type Graph

This report allows you to see savings for each utility type in your facility. The graph shows the Baseline and Actual or SimActual data and allows you to see the savings or loss.

This is one of the easiest reports to create in all of Report Maker. The only dialog box you will see is shown in Figure 44. This options menu wants only three pieces of information. First the site you want to compare utility types, the year in which to compare and the scenario in which you want to compare. The most common scenario that is reported is the Baseline vs. Actual.

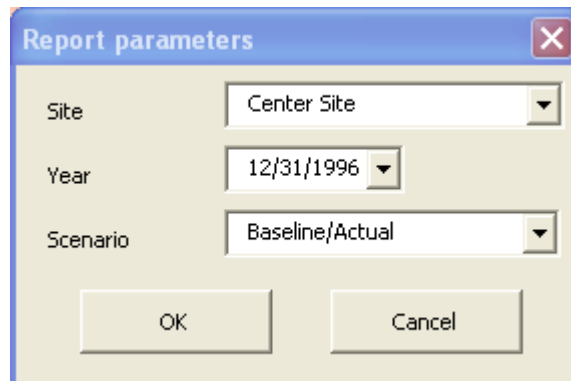**Figure 44: Options Menu for Utility Type Graph**

Once you have selected the options you want for your report click **OK**. The reports will be generated, one per utility type. This means that electricity meters will be added together, as would gas meters, etc. As you can see from Figure 45the graphs are very easy to read and provide a good visual of the difference between Baseline and Actual or SimActual usage.

Baseline/Actual Electricity kWh for Center Site Site
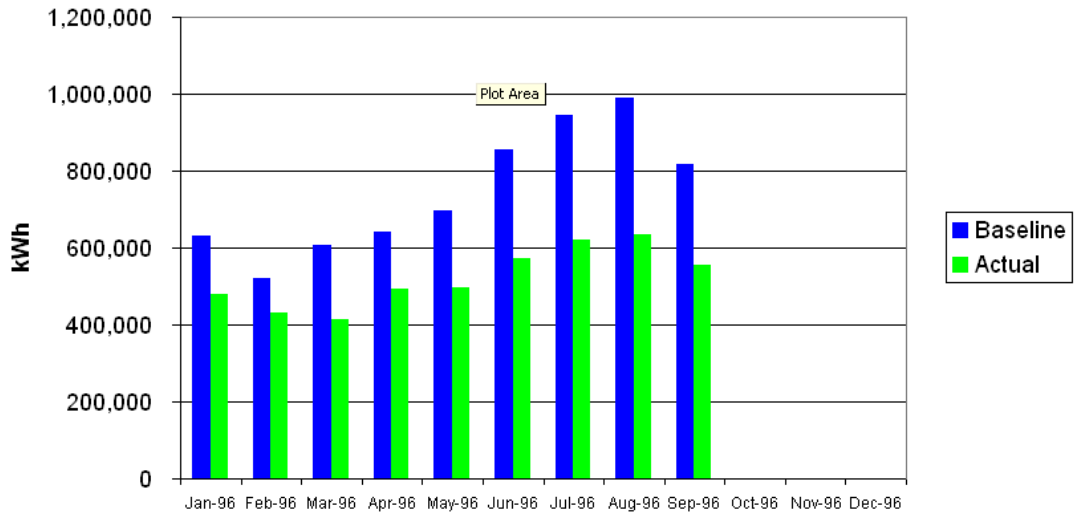
Year Ending 12/31/1996

Scenario	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Baseline	631,193	521,583	608,289	640,091	696,420	853,454	944,494	989,542	818,761	0	0	0	6,703,827
Actual	481,000	432,000	415,000	492,000	496,000	572,000	620,000	635,000	554,000	0	0	0	4,697,000
Baseline-Actual	150,193	89,583	193,289	148,091	200,420	281,454	324,494	354,542	264,761	0	0	0	2,006,827

Figure 45: Savings by Utility Type Graph

Project Breakdown Report

The Project Breakdown Report presents one table that contains all of the information for cost, consumption, or demand for every Meter, Area and Site as well as the entire project. It is presented in a cascading format which sums up each component and displays the total for the entire project.

	Project	Site	Area	Utility	Meter	Account #	Actual
	Gulf Med Ctr						**$58,099**
		Center Site					$ 58,099
			Med Ctr Building				$ 58,099
				Electric (kWh)			$ 49,768
					Primary Elec	XYZ-Electric	$ 49,768
				Natural Gas (Therm)			$ 8,331
					Primary Gas	XYZ-Gas	$ 8,331

Multi-Level Breakdown Summary for Project : Gulf Med Ctr

This report displays all bills.

Figure 46: Project Breakdown Report

As you can see from Figure 46 the data for the entire project is displayed in the table. This report has one unique options menu that has not been covered yet up to this point. It is displayed in Figure 47.

Figure 47: Grouping Order Options Menu

From this menu you can set up the way in which you want the report cascaded. From the Figure you can see we have Meter as the smallest unit followed by Utility and then Area, Site and

Project. You can change this order to several different variations. Also from this menu you have the option as to what units your data shows and whether you want a grand total in the Figure.

Understand or Describe Baseline

Reports that are under the 'Understand and Describe Baseline' section allow the user to access reports that show how the Baseline usage was calculated and how far a facility has deviated from this calculated Baseline usage.

Meter Tuning Contract

The Meter Tuning Contract contains all relevant information that is needed to document your tunings (if you tuned your meters). The Meter Tuning Contract is nearly identical to the corresponding report in Metrix 3. The only change is that modifications are now only listed as offsets, even though multipliers might have been used.

Meter Tuning Contract

Project: Gulf Med Ctr   Site: Med Ctr Building   Area: Med Ctr Building
Meter: Primary Elec   Unit:Qty OnPk (kWh)   Account: XYZ-Electric

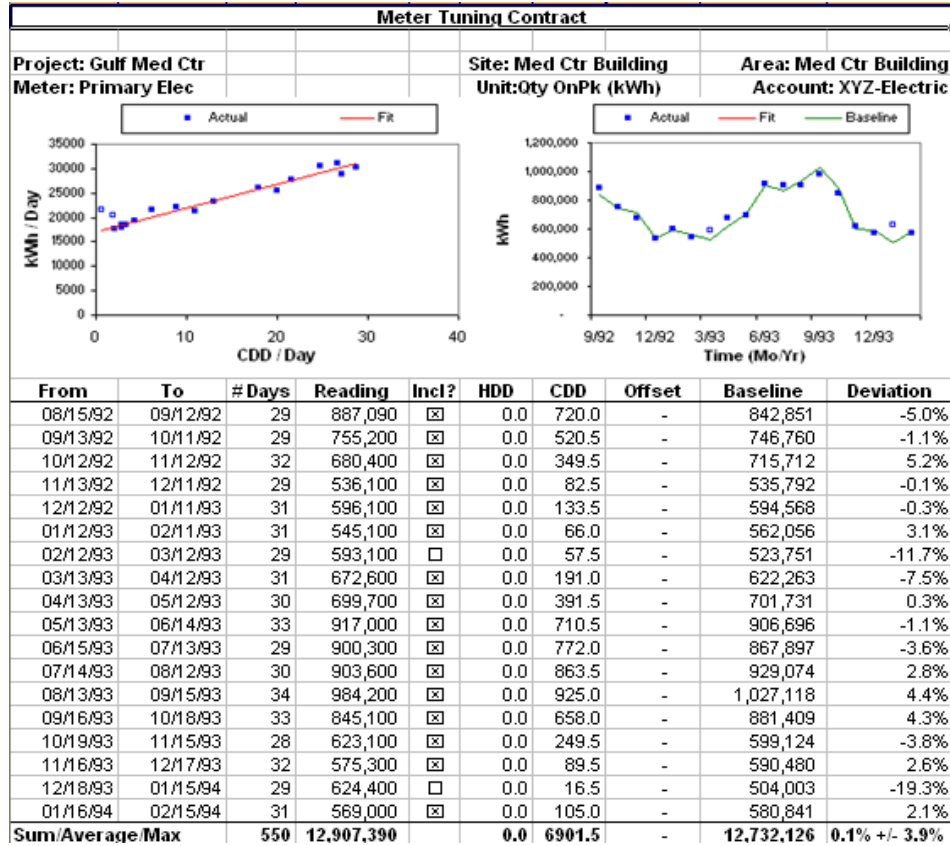| From	To	#Days	Reading	Incl?	HDD	CDD	Offset	Baseline	Deviation
08/15/92	09/12/92	29	887,090	☒	0.0	720.0	-	842,851	-5.0%
09/13/92	10/11/92	29	755,200	☒	0.0	520.5	-	746,760	-1.1%
10/12/92	11/12/92	32	680,400	☒	0.0	349.5	-	715,712	5.2%
11/13/92	12/11/92	29	536,100	☒	0.0	82.5	-	535,792	-0.1%
12/12/92	01/11/93	31	596,100	☒	0.0	133.5	-	594,568	-0.3%
01/12/93	02/11/93	31	545,100	☒	0.0	66.0	-	562,056	3.1%
02/12/93	03/12/93	29	593,100	☐	0.0	57.5	-	523,751	-11.7%
03/13/93	04/12/93	31	672,600	☒	0.0	191.0	-	622,263	-7.5%
04/13/93	05/12/93	30	699,700	☒	0.0	391.5	-	701,731	0.3%
05/13/93	06/14/93	33	917,000	☒	0.0	710.5	-	906,696	-1.1%
06/15/93	07/13/93	29	900,300	☒	0.0	772.0	-	867,897	-3.6%
07/14/93	08/12/93	30	903,600	☒	0.0	863.5	-	929,074	2.8%
08/13/93	09/15/93	34	984,200	☒	0.0	925.0	-	1,027,118	4.4%
09/16/93	10/18/93	33	845,100	☒	0.0	658.0	-	881,409	4.3%
10/19/93	11/15/93	28	623,100	☒	0.0	249.5	-	599,124	-3.8%
11/16/93	12/17/93	32	575,300	☒	0.0	89.5	-	590,480	2.6%
12/18/93	01/15/94	29	624,400	☐	0.0	16.5	-	504,003	-19.3%
01/16/94	02/15/94	31	569,000	☒	0.0	105.0	-	580,841	2.1%
Sum/Average/Max		550	12,907,390		0.0	6901.5	-	12,732,126	0.1% +/- 3.9%

Figure 48: Meter Tuning Contract Report

As can be seen from Figure 48 the contract includes such values as the Heating Degree Days, Cooling Degree Days, offset, Baseline, and Deviation. The boxed information includes the Baseline equation for the trend in the data. It also has the statistical indicators showing how accurate the Baseline equation is to your data. Any explanations and assumptions are listed at the bottom of the boxed information.

Verification Report

The Verification Summary can be used to understand or better explain how the Baseline values are calculated. The Verification Summary is the same as in Metrix 3.

Baseline Usage Verification Summary

BASELINE is the calculated usage for the billing period based upon past utility bill patterns.   ACTUAL is the actual usage for the billing period taken directly from the utility bills.

TARGET is the predicted usage for the billing period after measures are implemented.   VARIABLE COEFFICIENTS are the statistical result of tuning each meter to past utility bill patterns.

This summary shows how the Baseline and Target Usage are calculated for each billing period.

	Variable(s): Constant # of Days	Heating: Coefficient Degree Days	Cooling: Coefficient Degree Days	User Var 1: Coefficient Value	User Var 2: Coefficient Value	User Var 3: Coefficient Value		Modification(s) Coefficient Offset	Measure(s) Coefficient Offset		
Area: Numidia Meter: Numidia Elec. End Date: 9/12/02	17,105.36		481.66					* 1	1		
Qty On-pk	x 29		x 720					+ 0	0		
(kWh)	496,055		346,795				842,851 Preliminary Baseline	842,851 Baseline	842,851 Target	887,090 Actual	

	Variable(s): Constant # of Days	Heating: Coefficient Degree Days	Cooling: Coefficient Degree Days	User Var 1: Coefficient Value	User Var 2: Coefficient Value	User Var 3: Coefficient Value		Modification(s) Coefficient Offset	Measure(s) Coefficient Offset		
Area: Numidia Meter: Numidia Elec. End Date: 9/12/02	1,185.63		3.73					* 1	1		
Dmd On-pk	x 1		x 24.83					+ 0	0		
(kW)	1,186		93				1,278 Preliminary Baseline	1,278 Baseline	1,278 Target	1,285 Actual	

Figure 49: Verification Summary Report

As seen in Figure 49 all of values that were used in calculating the Baseline are separated by component and then added together to get the final value shown in the last column on the right. Some of these components include Constant x #Days and CDD Coefficient x #CDD. Modifications are also taken into consideration and can be seen in the Figure on the right hand side.

Tuning Graph

The Tuning Graph report allows you to obtain the tuning graphs and statistical information for selected meters in your report. You can choose to run the report for one meter, multiple meters, or the entire project. Each meter will return the graph for the tuning as well as the Baseline equation and statistical indicators. A sample report has been shown in Figure 50.

Tuning Graph for Primary Elec [kWh]

$kWh = 17105.36 \times \#Days + 481.66 \times ClgDD$

R^2 =	0.965	Net Mean Bias Error =	0.124%	CVRMSE =	3.9%

The tuning period covers 18 bills from 8/15/1992 to 2/15/1994.

HDDs were generated using MOBILE, AL weather at a 65 °F balance point.

CDDs were generated using MOBILE, AL weather at a 54 °F balance point.
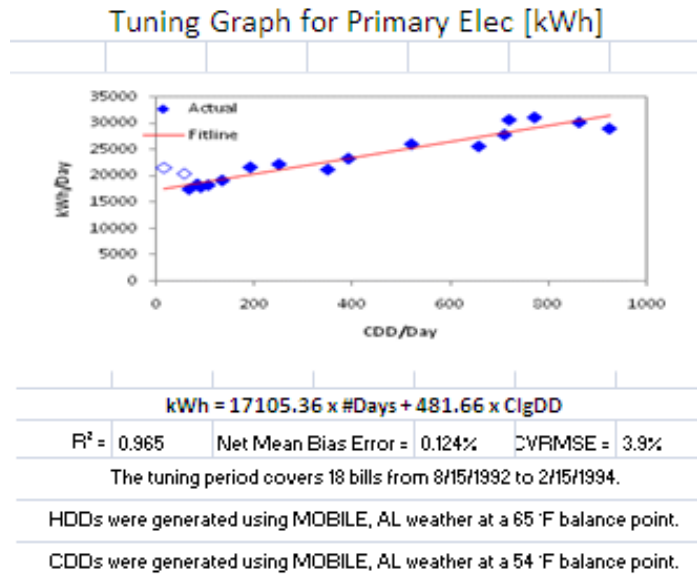
Figure 50: Sample Tuning Graph Report

List Bills

This section of reports allows the user to display information for any number of bills over a certain time period in one report.

Bill Ledger Report

The Bill Ledger Report is simply a listing of the bill data. Data for each bill is put into different columns including the consumption, demand, cost, HDD and CDD. The report will be displayed as seen in Figure 51.

Bill Ledger Report for Meter: Cyrenaica Electric

Site: Cyrenaica					Area: Cyrenaica					Utility: Electric
Meter: Cyrenaica Electric										Account: 1652-815-767
From	To	# Days	kWh	Demand	Cost	HDD	CDD	$/kWh	kWh/day	LF
6/20/01	7/18/01	29	17,137.00	89.00	$ 1,317.00	39	286	$ 0.077	590.9	28%
7/19/01	8/20/01	33	17,615.00	95.00	$ 1,374.00	11	359	$ 0.078	533.8	23%
8/21/01	9/18/01	29	26,986.00	152.00	$ 1,876.00	100	131	$ 0.070	930.6	26%
9/19/01	10/17/01	29	30,448.00	141.00	$ 1,854.00	523	0	$ 0.061	1,049.9	31%
10/18/01	11/15/01	29	29,249.00	143.00	$ 1,806.00	610	0	$ 0.062	1,008.6	29%
11/16/01	12/19/01	34	35,048.00	145.00	$ 1,934.00	1109	0	$ 0.055	1,030.8	30%
Total (Average)		183	156,483.00	152.00	$ 10,161.00	2391	776	$ 0.065	1,049.9	23%
12/20/01	1/21/02	33	29,623.00	145.00	$ 1,760.00	1615	0	$ 0.059	897.7	26%
1/22/02	2/19/02	29	32,173.00	150.00	$ 1,874.00	1215	0	$ 0.058	1,109.4	31%
2/20/02	3/20/02	29	34,334.00	152.00	$ 1,956.00	1378	0	$ 0.057	1,183.9	32%
3/21/02	4/19/02	30	31,764.00	159.00	$ 1,834.00	899	12	$ 0.058	1,058.8	28%
4/20/02	5/21/02	32	33,559.00	152.00	$ 1,887.00	732	0	$ 0.056	1,048.7	29%
5/22/02	6/20/02	30	25,000.00	158.00	$ 1,776.00	166	77	$ 0.071	833.3	22%
6/21/02	7/19/02	29	10,370.00	51.00	$ 793.00	7	307	$ 0.076	357.6	29%
7/20/02	8/19/02	31	9,858.00	56.00	$ 808.00	43	186	$ 0.082	318.0	24%
8/20/02	9/18/02	30	27,844.00	173.00	$ 1,917.00	54	165	$ 0.069	928.1	22%
9/19/02	10/17/02	29	30,828.00	155.00	$ 1,738.00	581	6	$ 0.056	1,063.0	29%
10/18/02	11/19/02	33	35,440.00	151.00	$ 1,889.00	1157	0	$ 0.053	1,073.9	30%
11/20/02	12/18/02	29	32,923.00	158.00	$ 1,880.00	1236	0	$ 0.057	1,135.3	30%
Total (Average)		364	333,716.00	173.00	$ 20,112.00	9079	751	$ 0.060	1,183.9	22%
12/19/02	1/21/03	34	28,473.00	157.00	$ 1,744.00	1686	0	$ 0.061	837.4	22%
1/22/03	2/19/03	29	34,749.00	153.00	$ 1,920.00	1673	0	$ 0.055	1,198.2	33%
2/20/03	3/20/03	29	32,847.00	152.00	$ 1,872.00	1344	0	$ 0.057	1,132.7	31%
Total (Average)		92	96,069.00	157.00	$ 5,536.00	4702	0	$ 0.058	1,198.2	28%

Figure 51: Bill Ledger Report for an Electricity Meter

Find Billing Problems

Sometimes error occur within reports and they may not be the most obvious to see. 'Find Billing Problems' reports allow the user to effectively manage their Metrix Projects and find billing errors so they can be fixed.

Diagnostic Reports

The Diagnostics Report allows you to run tests through your Metrix Projects to see if there are any errors from your data. When you run a Diagnostics Report a special options menu will be displayed as seen in Figure 52.
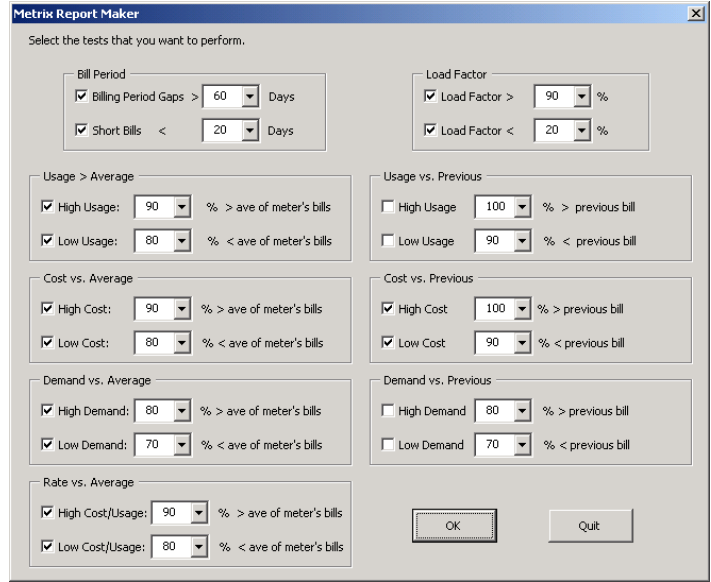
Figure 52: Diagnostic Tests Dialog Box

From this menu you can choose to run a variety of tests for your Metrix Project. For instance, in the top left corner you can run a test that will report any bills that have billing periods larger than 60 days (extremely long) or less than 20 days (extremely short). Report Maker will return a report that has data cells highlighted marking an error with this cell. This allows you to find any errors and fix them immediately. The report will look like Figure 53.

Diagnostics Report for Meter: Pannonia Gas

Site: Hieropolis
Meter: Pannonia Gas

From	To	# Days	CCF	Demand	Cost	HDD	CDD	$/CCF	CCF/day	LF	Notes
1/18/97	2/17/97	31	12,261.19	-	$ 2,927.00	1466	0	$ 0.239	395.5		3
2/18/97	3/17/97	28	8,008.00	-	$ 1,808.00	1036	0	$ 0.226	286.0		3
3/18/97	4/16/97	30	5,368.87	-	$ 1,145.00	712	0	$ 0.213	179.0		
4/17/97	5/16/97	30	2,639.13	-	$ 514.00	383	0	$ 0.195	88.0		
5/17/97	6/17/97	32	1,962.36	-	$ 330.00	88	32	$ 0.168	61.3		
6/18/97	7/17/97	30	164.24	-	$ 37.00	14	204	$ 0.225	5.5		
7/18/97	8/14/97	28	3,468.81	-	$ 568.00	5	145	$ 0.164	123.9		7, 9
8/15/97	9/16/97	33	3,279.09	-	$ 536.00	29	67	$ 0.163	99.4		
9/17/97	10/15/97	29	4,683.61	-	$ 720.00	135	24	$ 0.154	161.5		
10/16/97	11/13/97	29	9,347.39	-	$ 2,032.00	685	0	$ 0.217	322.3		3, 7, 9
11/14/97	12/15/97	32	11,485.31	-	$ 2,916.00	1065	0	$ 0.254	358.9		3
Total (Average)		**332**	**62,668.00**	**-**	**$ 13,533.00**	**5617**	**471**	**$ 0.216**	**395.5**		
12/16/97	1/19/98	35	12,320.66	-	$ 2,824.00	1403	0	$ 0.229	352.0		3
1/20/98	2/17/98	29	9,585.25	-	$ 22,160.00	1028	0	$ 2.312	330.5		3, 5, 6, 9
2/18/98	3/18/98	29	10,162.92	-	$ 2,464.00	918	0	$ 0.242	350.4		3
3/19/98	4/17/98	30	7,787.13	-	$ 1,941.00	452	2	$ 0.249	259.6		3
4/18/98	5/18/98	31	4,247.53	-	$ 872.00	122	35	$ 0.205	137.0		
5/19/98	6/17/98	30	3,089.37	-	$ 494.00	97	50	$ 0.160	103.0		
6/18/98	7/17/98	30	235.03	-	$ 43.00	0	241	$ 0.183	7.8		
7/18/98	8/14/98	28	2,081.29	-	$ 568.00	1	184	$ 0.273	74.3		7, 9
8/15/98	9/16/98	33	2,876.99	-	$ 536.00	4	142	$ 0.186	87.2		
9/17/98	10/15/98	29	2,809.03	-	$ 720.00	92	70	$ 0.256	96.9		
10/16/98	11/13/98	29	8,200.56	-	$ 2,032.00	623	0	$ 0.248	282.8		3, 7, 9
11/14/98	12/15/98	32	9,381.37	-	$ 2,916.00	1011	0	$ 0.311	293.2		3
Total (Average)		**365**	**72,777.13**	**-**	**$ 37,570.00**	**5752**	**722**	**$ 0.516**	**352.0**		

Area: Hieropolis Barracks

Utility: Gas Vol
Account: 6

Figure 53: Diagnostics Report

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Missing Bills Report

The Missing Bills Report will look for gaps in your data that contain no information and will look to see if you are missing bills for the last few months as well. If no missing bills or data are found the report will look like the report in Figure 54. However, if missing data is found the report will look more like ~~Figure 55~~.

Figure 54: Missing Bills Report with No Missing Data

Site Name	Area Name	Meter Name	Account Number	Fuel Type	Estimated Bill Interval	Prior Bill	Post Bill	# Missing Bills	Missing Bills (dates estimated)
Achaea	Achaea	Achaea Dual Gas	502-033-857-802	Therm	30	11/9/01	2/11/02	2	12/9/01, 1/8/02
Achaea	Achaea	Achaea Water	Blmgt: 40061	Unit	30	2/25/03	missing	1	3/27/03
Aegyptus	Aegyptus	Aegyptus Water	Blmgt: 17601	Unit	30	2/25/03	missing	1	3/27/03
Arabia Nabataea	Arabia Nabataea	Arabia Nabataea Water	Blmgt: 68821	Unit	30	2/25/03	missing	1	3/27/03
Belgica	Belgica	Belgica Water	Blmgt: 68961	Unit	30	2/25/03	missing	1	3/27/03
Bithynia et Pontus	Bithynia et Pontus	Bithynia et Pontus Fir	502-025-294-500	Therm	30	9/13/02	12/10/02	2	10/13/02, 11/12/02
Bithynia et Pontus	Bithynia et Pontus	Bithynia et Pontus Wat	Blmgt: 57721	Unit	30	2/25/03	missing	1	3/27/03
Britannia	Britannia	Brittania Water	Blmgt: 42041	Unit	30	2/25/03	missing	1	3/27/03
Cappadocia	Cappadocia	Cappocia Water	Blmgt: 57551	Unit	30	2/25/03	missing	1	3/27/03
Cyrenaica	Cyrenaica	Cyrenaica Water	Blmgt. 20631	Unit	30	2/25/03	missing	1	3/27/03
Dalmatia	Dalmatia	Dalmatia Lighting	0029-510-843	kWh	30	12/5/01	missing	13	1/4/02, 2/3/02 … 4/2/03
Dalmatia	Dalmatia	Dalmatia Water	Brmtg. 41531	Unit	30	2/25/03	missing	1	3/27/03
Germania	Germania	Germania Firm Gas	502-025-277-600	Therm	30	11/10/01	1/15/02	1	12/10/01
Germania	Germania	Germania Firm Gas	502-025-277-600	Therm	30	1/16/02	5/13/02	3	2/15/02, 3/17/02, 4/17/02
Germania	Germania	Germania Water	Blmgt: 40101	Unit	30	2/25/03	missing	1	3/27/03
Numidia	Numidia	Numidia Firm Gas	502-025-296-300	Therm	30	8/16/01	10/23/01	1	9/15/01
Numidia	Numidia	Numidia Water	Blmgt: 57381	Unit	30	2/25/03	missing	1	3/27/03
Pannonia	Pannonia	Pannonia Electric	5-1971-0116-5481	kWh	30	5/23/00	missing	29	6/22/00, 7/22/00 … 4/2/03
Pannonia	Pannonia	Pannonia Gas	5-1971-0116-5481	Therm	30	4/27/95	9/21/95	4	5/27/95, 6/26/95, 7/27/95, 8/26/95
Pannonia	Pannonia	Pannonia Gas	5-1971-0116-5481	Therm	30	5/23/00	missing	29	6/22/00, 7/22/00 … 4/2/03
Thrace	Thrace	Thrace Water	Blmgt: 59531	Unit	30	2/25/03	missing	1	3/27/03

Figure 55: Missing Bills Report with Missing Data

Benchmark – Compare Sites

Benchmark Report

The Benchmarking Report allows you to compare several Sites or Areas by Consumption, Demand, Cost, Variable, Emissions or Ratio. It is important to note that if you only have one site in your project then this report will do you no good because you will have nothing to compare it against. There is a special options menu you will encounter that has not been covered yet and it is seen in Figure 56.
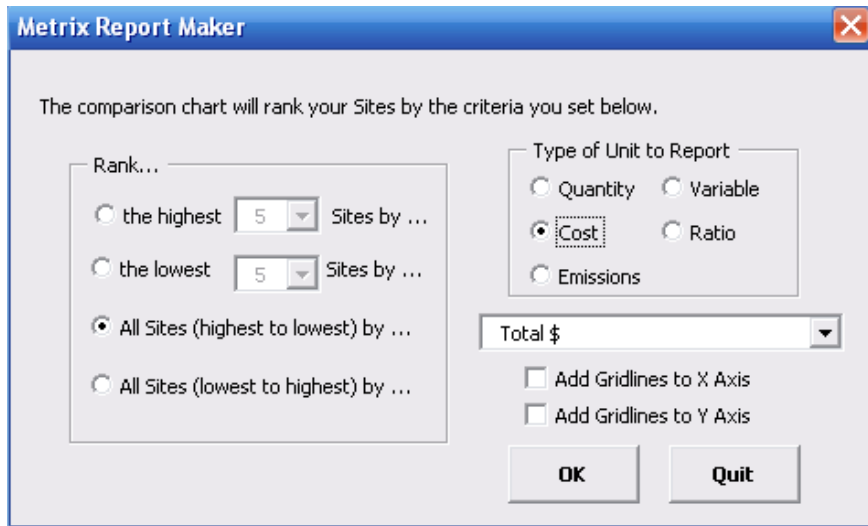
Figure 56: Options Menu for Benchmark Report

From this options menu you can select how you want your sites to be ranked on the chart. On the left side of the menu you can choose to display the 5 highest or lowest, or you can show the ranking of all sites. On the right side you can choose for which unit you are ranking the sites and whether you want gridlines added to your graph. All other menus in the set up of this project have been covered.

Once you are done selecting your settings, the Benchmarking Report will create a Chart and Table in separate Worksheets that shows all of your data. Figure 57 and Figure 58 are samples of the graph and table.
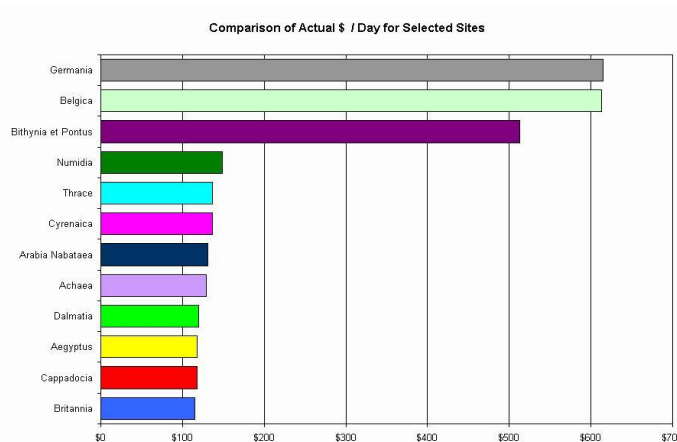
Figure 57: Benchmarking Report Graph

Comparison of Actual $ / Day for Selected Sites

Site	$ / Day
Britannia	$115
Cappadocia	$118
Aegyptus	$118
Dalmatia	$120
Achaea	$129
Arabia Nabataea	$131
Cyrenaica	$136
Thrace	$137
Numidia	$149
Bithynia et Pontus	$513
Belgica	$613
Germania	$615

*Report covers the period from 1/1/02 to 12/31/02.

Figure 58: Benchmarking Report Table

Break Out Usage/Costs by…

Breakout Reports allow you to break out your total costs by fuel type. This allows you to easily compare utilities cost and consumption. Breakout reports include the Pie Chart and a Site Comparison table.

Fuel Type - Pie Chart

The Pie Chart will break out your usage by Fuel Type and color coordinate each utility. The Pie Chart can be performed at the Project, Site, Area or Meter level, and can be performed for groups of Sites, Areas or Meters. The report will display the consumption of each utility as well as the cost for each utility and the percentage of the total cost for all utilities. A sample pie chart has been prepared in Figure 59.

Cost Summary by Utility Type for Site: Britannia

This report displays bills from 1/1/02 to 12/30/02.

Fuel Type	Consumption			Cost	Percent
Electric	334,400	kWh	$	20,498.00	54.8%
Natural Gas	25,917	Therm	$	10,717.00	28.7%
Fuel Oil	3,440	gal	$	2,021.00	5.4%
Water	1,304,000	Unit	$	4,143.00	11.1%
Total			$	37,379.00	100.0%
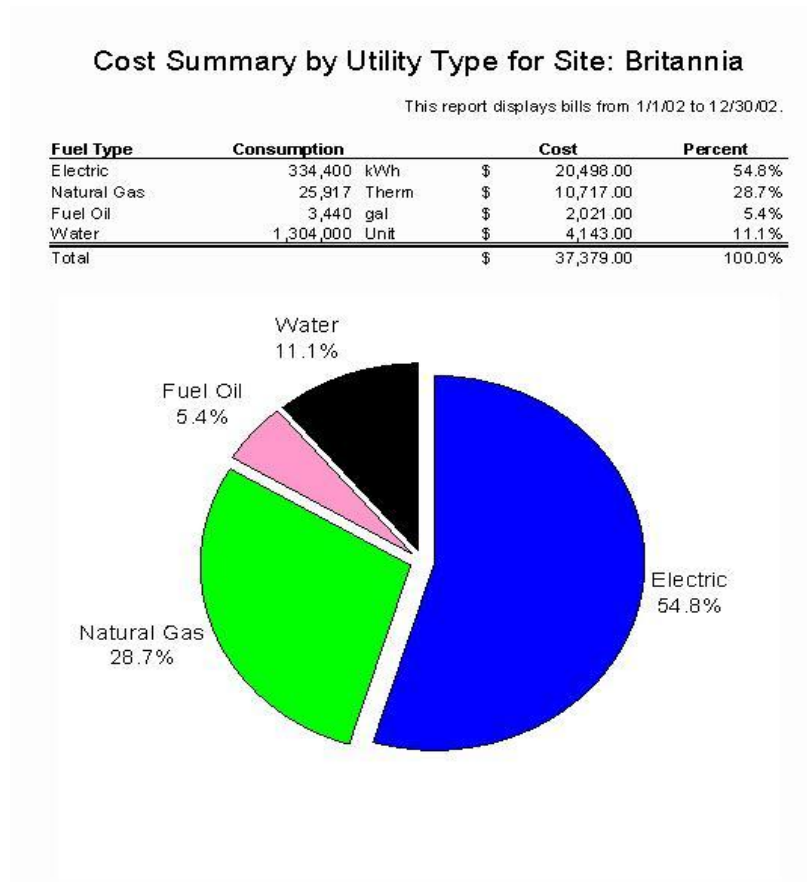
Figure 59: Pie Chart Report

Sites - Building Comparison Report

The Site Comparison Report is very similar to the pie chart but this report puts the data into a table instead which lists consumption and costs by Site. In the setup you have the options to break up the table by site or area and the option to determine which utilities you want to include. All setup menus have been previously discussed in this manual. Below is a sample Site Comparison Report shown in Figure 60.

Building Report for Project: Provincial Stadiums

This report displays bills from 1/1/02 to 12/31/02.

Building	Fuel Type	Consumption	Units	Cost	Percent
Achaea					
	Electric	424,891	kWh	$ 26,304.00	13.3%
	Natural Gas	31,027	Therm	$ 22,112.00	11.2%
	Fuel Oil	744	gal	$ 23,654.00	12.0%
	Water	1,122,000	Unit	$125,748.00	63.6%
				$197,818.00	100.0%
Aegyptus					
	Electric	392,312	kWh	$ 95,856.00	57.8%
	Natural Gas	26,519	Therm	$ 22,610.00	13.6%
	Fuel Oil	3,002	gal	$ 27,174.00	16.4%
	Water	1,430,000	Unit	$ 20,112.00	12.1%
				$165,752.00	100.0%
Numidia					
	Electric	519,056	kWh	$ 24,695.00	10.7%
	Natural Gas	45,834	Therm	$156,213.00	67.9%
	Fuel Oil	4,271	gal	$ 28,061.00	12.2%
	Water	1,134,000	Unit	$ 20,997.00	9.1%
				$229,966.00	100.0%
Arabia Nabataea					
	Electric	427,531	kWh	$ 16,055.00	12.7%
	Natural Gas	40,827	Therm	$ 13,978.00	11.1%
	Fuel Oil	2,138	gal	$ 16,889.00	13.4%
	Water	1,476,000	Unit	$ 79,517.00	62.9%
				$126,439.00	100.0%

Figure 60: Site Comparison Report

List Data for a Custom Report

Data List for Custom Report

Since there may be other reports that you might want to make yourself, the Metrix Report Maker can gather whatever data you need to create your report. The Metrix Report Maker can fill a worksheet with data in one of two formats: Time Across or Time Down. If you plan on creating some of your own reports, we suggest that you understand both formats first before creating your own custom reports. In addition, we suggest you limit whatever data you request from Metrix, as this will speed up the data gathering process.

The Time Across Format, Figure 61, is likely the better format for creating tracking reports. The data comes in 12 columns, one for each month of the Report Year. Each row represents one year. The Time Across Format can gather Consumption, Demand, Cost, Variable, Emissions and Ratio information for whatever scenarios you request. The Time Across Format does not contain tuning coefficients or tuning information.

Figure 61: Time Across Data Worksheet

The Time Down Format, Figure 62, is the better format for gathering Tuning information, Degree Days, Modifications, and Measures. Each row in the Time Down Format represents one bill. Cost, Demand and Consumption data are all in the same row, for all Scenarios requested.

Figure 62: Time Down Data Worksheet

The Time Across Format includes the following columns of data:

Table 3: Time Across Format Columns

Column	Data	Column	Data
A	Project ID	R	Utility Name
B	Site ID	S	Meter Kind
C	Area ID	T	Utility Unit
D	R_MULT	U	End Date
E	Meter ID	V	July
F	Beginning Month	W	August
G	Beginning Year	X	September
H	G_NUM	Y	October
I	Meter Kind	Z	November
J	F_TYPE	AA	December
K	TOU Period	AB	January
L	Utility Type	AC	February
M	Scenario	AD	March
N	Project Name	AE	April
O	Site Name	AF	May
P	Area Name	AG	June
Q	Meter Name	AH	# Bills

The Time Down Format includes the following columns of data:

Table 4: Time Down Format Columns

Column	Data	Column	Data	Column	Data
A	Project ID	AA	Fuel Name	BA	UVar1 Value
B	SiteID	AB	Area	BB	UVar2 Value
C	Area ID	AC	Unit Description	BC	UVar3 Value
D	Meter ID	AD	Unit	BD	Fit Constant
E	Weather ID	AE	Conversion Factor	BE	HDD Coefficient
F	UserVar1ID	AF	Number of Days	BF	CDD Coefficient
G	UserVar2ID	AG	Weather Site Code	BG	UVar1 Coefficient
H	UserVar3ID	AH	UserVar1 Label	BH	UVar2 Coefficient
I	Utility Type	AI	UserVar2 Label	BI	UVar3 Coefficient
J	TOU Period	AJ	UserVar3 Label	BJ	Preliminary Baseline
K	Billing Period	AK	Temperature Units	BK	Total Mod Offset
L	From Date	AL	UserVar1 Units	BL	Baseline Usage
M	To Date	AM	UserVar2 Units	BM	Total Measure Offset
N	Part Of Tuning	AN	UserVar3 Units	BN	Target Usage
O	Included In Tuning	AO	How Cost Applied	BO	SimActual Usage
P	Project Name	AP	Min Price Energy	BP	Actual Cost
Q	Site Name	AQ	Min Price Demand	BQ	SimActual Cost
R	Area Name	AR	HDD Balance Pt	BR	BaseLine Cost
S	Meter Name	AS	CDD Balance Pt	BS	Target Cost
T	Account Number	AT	Min HDD Day	BT	Demand Tune To Ave
U	Tune TOU Separately	AU	Min CDD Day	BU	CVRMSE
V	Weather Site	AV	R2	BV	Mean Bias
W	UserVar1 Name	AW	Actual Usage		
X	UserVar2Name	AX	Mult By (what to multiply		

			fit constant by)		
Y	UserVar3 Name	AY	HDDs		
Z	Fuel Type Code	AZ	CDDs		

Budgeting

Report Maker also allows you to create reports that will be used to plan yearly budgets for future years and compare them with budgets from previous years. Having a budget allows a company to set goals for its energy use and determines whether they are consuming too much or too little.

Forecast

A forecast report allows you to create yearly forecasts based on how you expect your usage or costs to change. This report is different than any report that has been covered so far. When you setup a Forecast Report the only options menu that will be displayed is seen in Figure 63

Figure 63: Options Menu for Forecast Report

The first thing you have to do is choose a year for which you want to forecast for. This is done by selecting a year from the box in the top left corner. You can then choose to filter your results if you have groups or Subgroups in your project.

Next you have to choose the data for which you will forecast from. You have to choose a year's worth of data. You have the option to include the most recent 12 months, a previous year, or an average from several years. Once you select the data in which you want to use click **OK**.

Report Maker will create the report and you will be presented with a table displaying the baseline forecast, along with the billing info that it's based on. This can be seen in Figure 64.
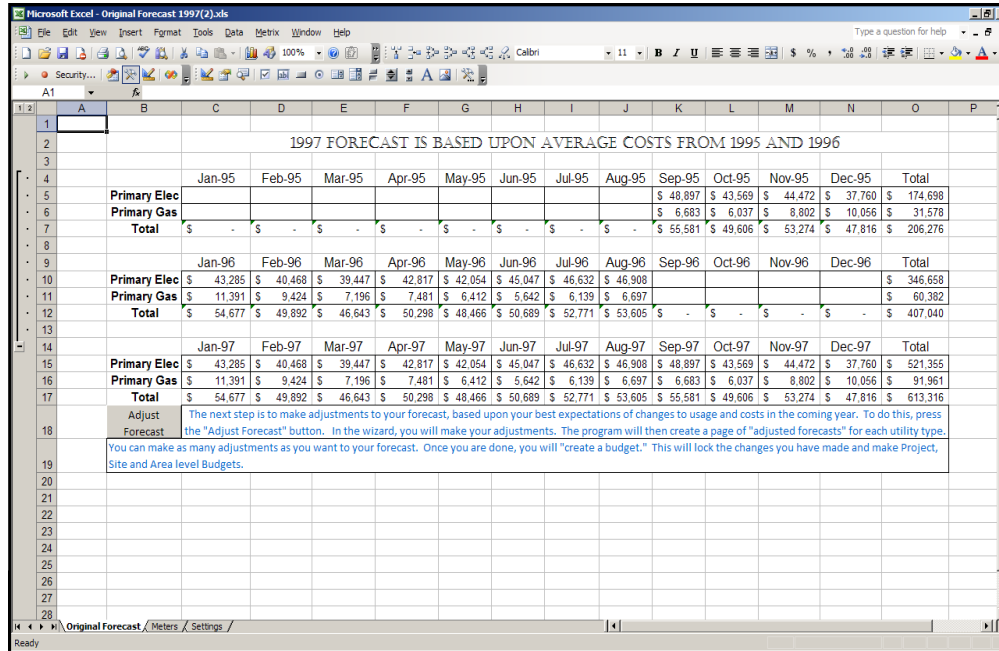
Figure 64: Forecast Report

This report just shows you what your estimated costs will be for the future year. Now you want to plan for the future and budget the report so you can save money. Press the Adjust Forecast button to open the adjustment wizard. The adjustment wizard allows you to adjust your forecast based on how you expect your usage and/or costs to change over the coming year. The screen that pops up will look like the one in Figure 65.
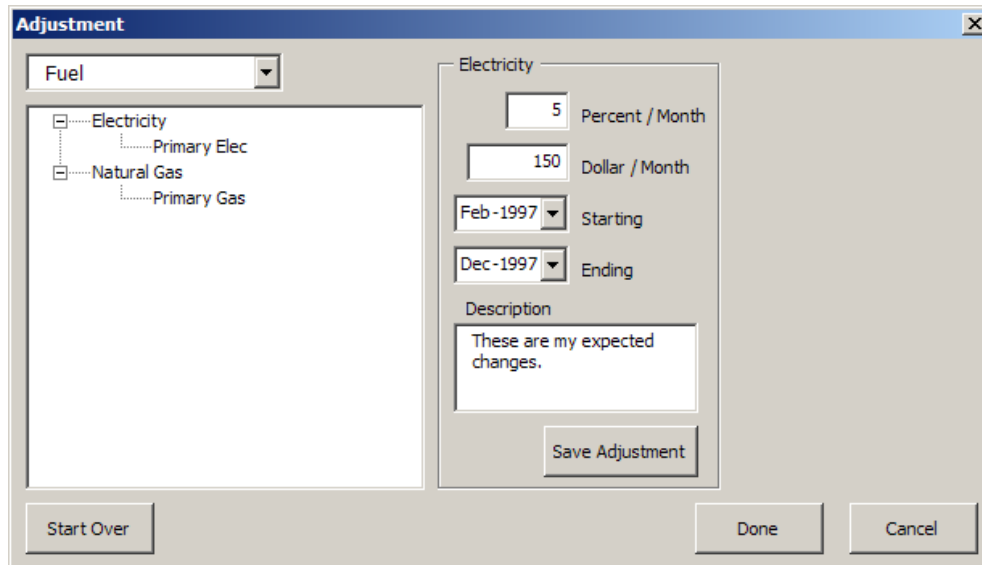
Figure 65: Adjustment Wizard Dialog Box

The tree on the left of the window has two tiers. The items in the first tier allow you to adjust whole categories of meters at once. Single meters can also be changed by expanding the tree structure and clicking on meters in the second tier. To adjust your forecast, enter the expected change in cost on the right. You can choose to either change the cost by a percentage or dollar amount. Note: if you plan to spend less during the year you are forecasting for, you must enter a negative amount in the options menu. Once you have made your changes click Save Adjustment.

After saving those adjustments, we can see that they were saved for all electric meters selected as seen in Figure 66. The rightmost value in the meter's table shows the *change* in that month's bill, not the total.
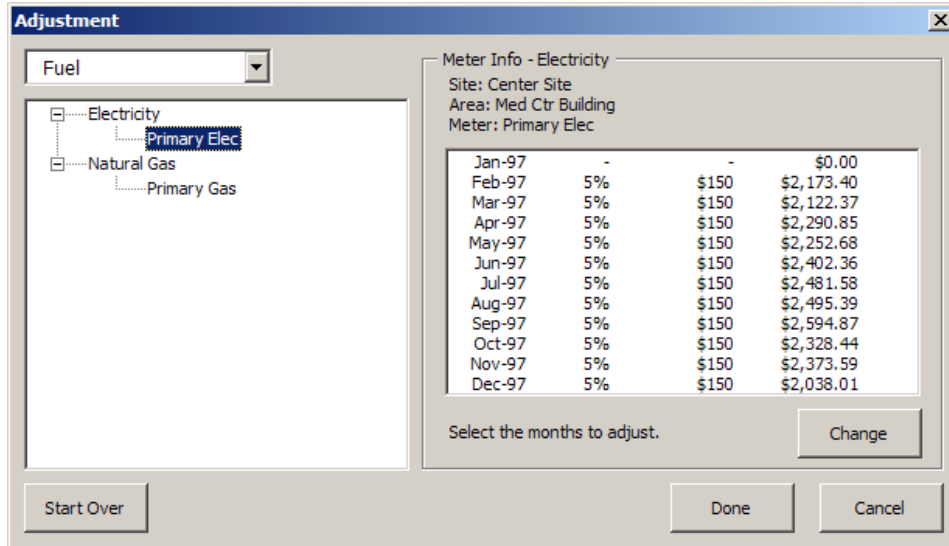
Figure 66: Changes Applied to Forecast

From here, if we wanted to make any further changes to any bills we could by selecting them from the list on the right in Figure 66. Once you have selected the ones you want to adjust click change as in Figure 67. You will want to change specific bills if you anticipate saving more or less during specific times of the year.
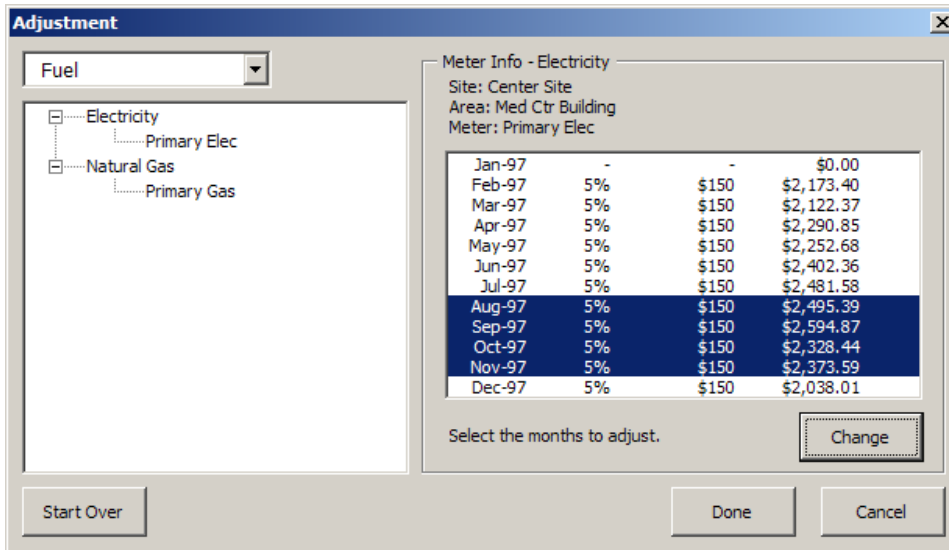
Figure 67: Applying Secondary Changes

Once you have made all the necessary adjustments to your meters click Done. Report Maker will make a new spreadsheet for each fuel type after you finish making your adjustments. You should have a screen that looks like Figure 68.

Figure 68: Adjusted Forecast Worksheet

These sheets display a summary of the adjustments made along with their consequences. If you need to make further adjustments, you can do so by clicking the Adjust Forecast button at the top of any sheet. When you are done making adjustments, click the Create Budget button to generate the final forecast as seen in Figure 69.

Figure 69: Final Forecast Worksheet

Creating the final budget forecast will generate four sheets; each sheet shows a different resolution (Site level, Area level, Meter level, etc.). These sheets will show you the budget you have made for yourself for each month. This allows you to set goals for your building and monitor just how well you are sticking to the budget. Save your forecast report for future reference. This forecast report is now your fiscal year budget and will be used in future months when you want to run a "Budget Comparison Report."

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Budget Comparison Report

Budget comparison reports allow the user to compare up-to-date bill data with forecasts that have been made previously. To run this report you will need a valid Forecast Report. If you have not created a Forecast Report see the previous section on instructions of how to do so.

When you click on the Budget Comparison Report, the first thing you will be required to do is load an existing Forecast Report. The directory in Figure 70 will be displayed on your screen.
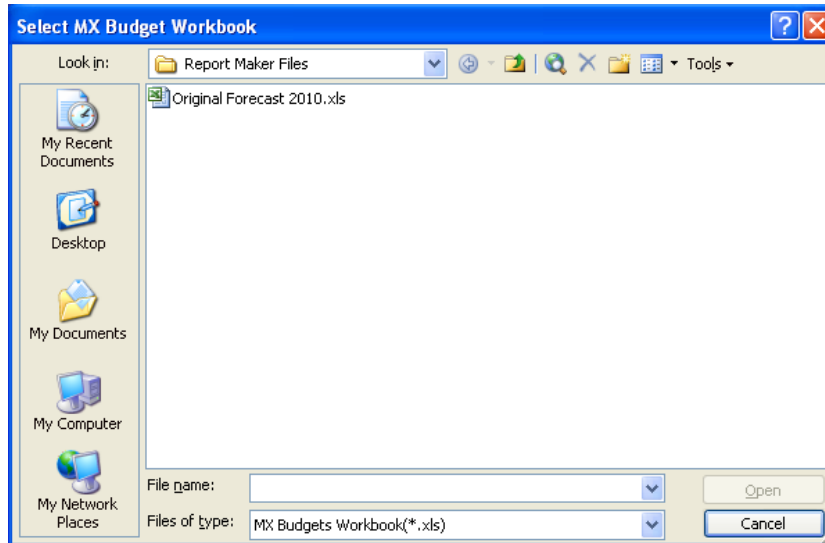
Figure 70: Directory to Locate Your Forecast Report

Once you find the forecast report you want to use, click Open. From there the rest of the setup is options menu that have already been explained in this manual. See the 'Creating Reports' section of this manual to learn about these options menus. Select the options that you want for your report in each menu and click **OK**. Report Maker will make a report that looks like the screen in Figure 71.
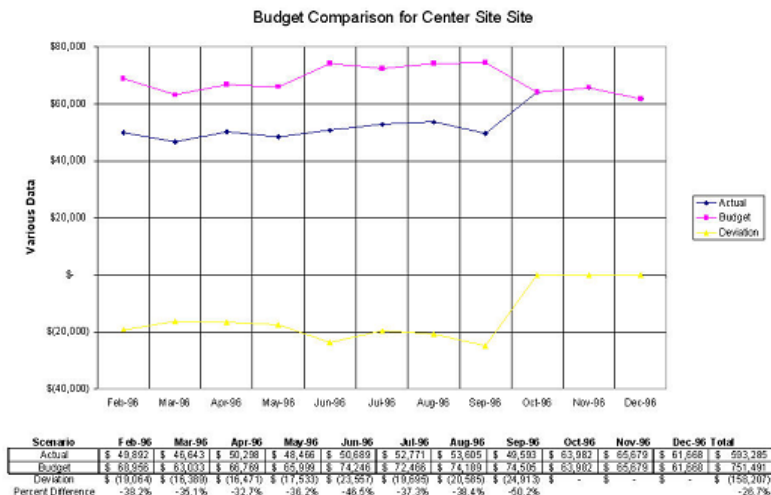
Figure 71: Budget Comparison Report

From the screenshot, you can see you are presented with the data from your Forecast Report as well as data from the current year's bills. You also have the difference between the Forecast and the actual bills which allows you to determine if you are saving or losing money.

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Items in the Settings List

Report Maker Settings

When running any report in Report Maker there are default settings that the program refers to. This section goes through all of these settings and how to change them.

Directories

When running the Metrix Report Maker for the first time, the program will guess what the directory settings should be. To be sure, check to make sure the directories are correct. Select Report Maker Settings from the Metrix menu item, as shown in Figure 72.
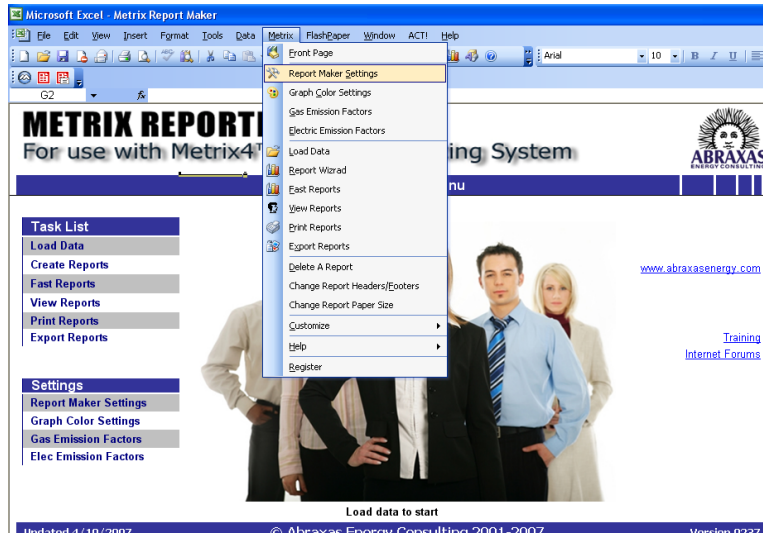
Figure 72: Selecting Report Maker Settings

Then select the Directories tab. The dialog box in Figure 73 will be seen. Press the Browse button to find the right directories, or type in the directory addresses. These will be where all your Metrix Projects and Reports are saved.
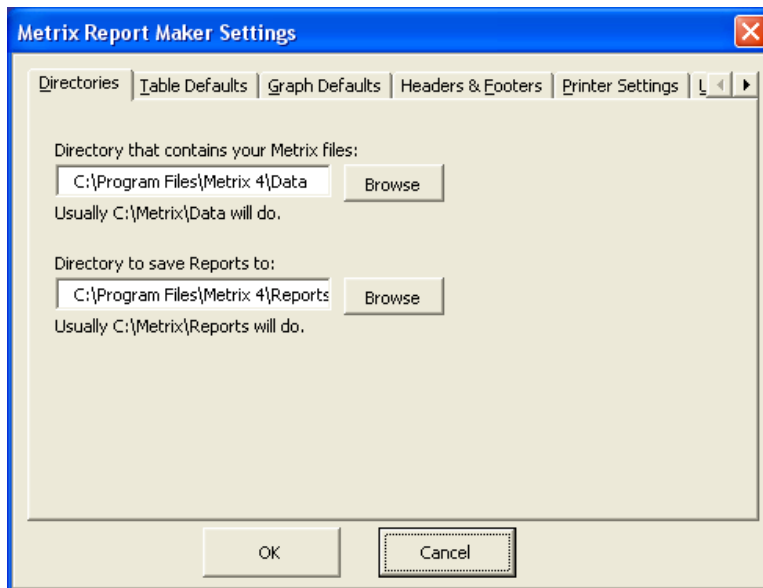
Figure 73: Metrix Report Maker Settings Data Form with the Directories Tab Selected

Table Defaults

Selecting the 'Table Defaults' tab from the Report Maker Settings Menu brings up the following menu seen in Figure 74.
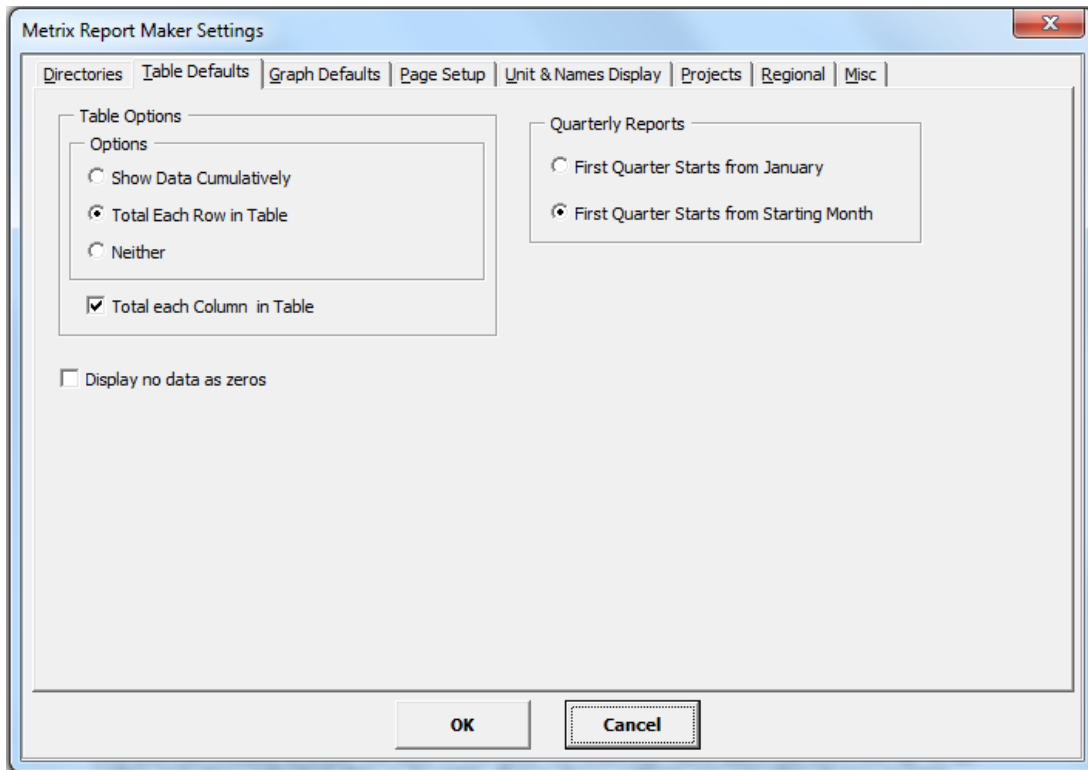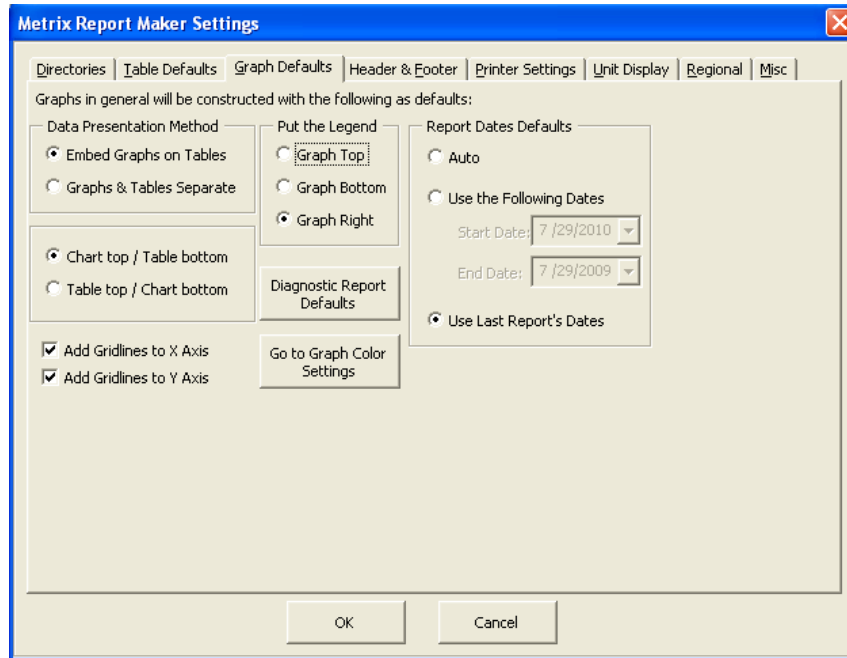

Figure 74: Table Defaults Options Menu

From this menu you have a couple of basic settings in which you can change. On the left hand side you can choose to show the data in the table cumulatively, have each row summed up, or do nether and show individual data in the table. Below these settings you can also choose to total each column in your table. Additionally, you can choose to have Metrix to display months with zero usage as either blanks or zeros.

The right hand side allows you to choose when you start the first quarter in quarterly reports. You have the option to start the first quarter in January or during the starting month of your data. When making reports, you can always override the default settings you have chosen.

Graph Defaults Settings

Selecting the 'Graph Defaults' tab from the Report Maker Settings Menu brings up the following menu seen in Figure 75.

Figure 75: Graph Defaults Options Menu

This menu gives you several options about where your graphs get placed in your report. The box in the top left corner allows you to either embed the chart and table on the same worksheet or to create separate worksheets for the graph and table. The option below that allows you to determine whether the chart or table will go on the top of the page. On the right side you can choose whether the legend goes on the top, bottom or right side of the graph. You can also choose to add gridlines to your graph. When making reports, you can always override the default settings you have chosen.

From this menu you can also access the Diagnostic Report Defaults and Graph Color Settings menu. Both of these menus are explained in other sections. Look in the 'Diagnostic Reports' section for the Diagnostic Report Defaults menu and look in the 'Graph Color Settings' section for that menu.

Page Setup Settings

All page setup properties are listed in one tab in Report Maker. There are two main options that can be seen in the figure below:
- Simple Page Setup
- Advanced Page Setup

You will need to adjust these settings before you run the reports, as the new settings will only be in effect for reports after the project is run.
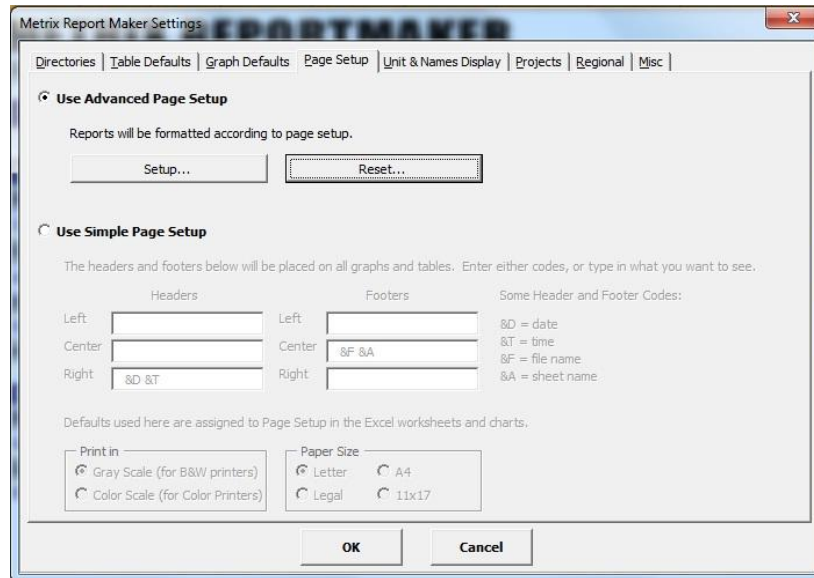
Figure 76: Header and Footer Options Menu

You can put in any of the codes or you can add in your own personal header and footer. Explore the various data forms and click **OK** when done.

You can also choose the Advanced Page Setup which allows you to personally set up the worksheet with your graph and table. You will be taken to a print preview screen where you will be able to alter your margins, page lay-out, and alignment of the page. This report seen is just a sample report that is used for altering purposes only. A screenshot of this page is provided in Figure 77.
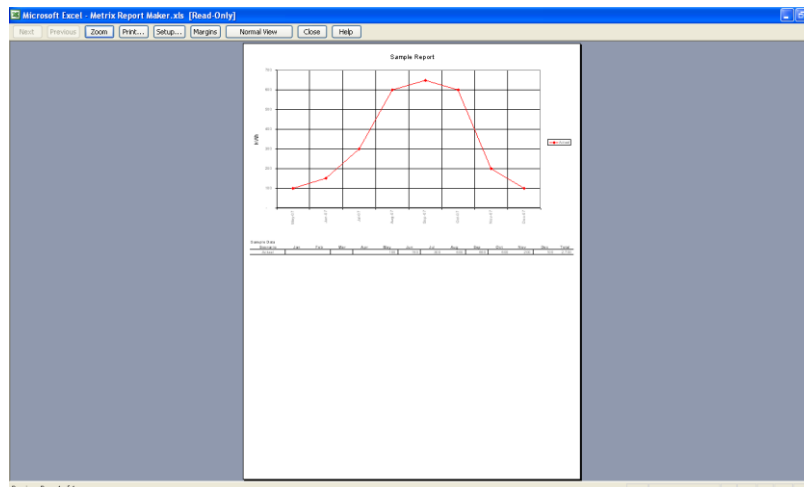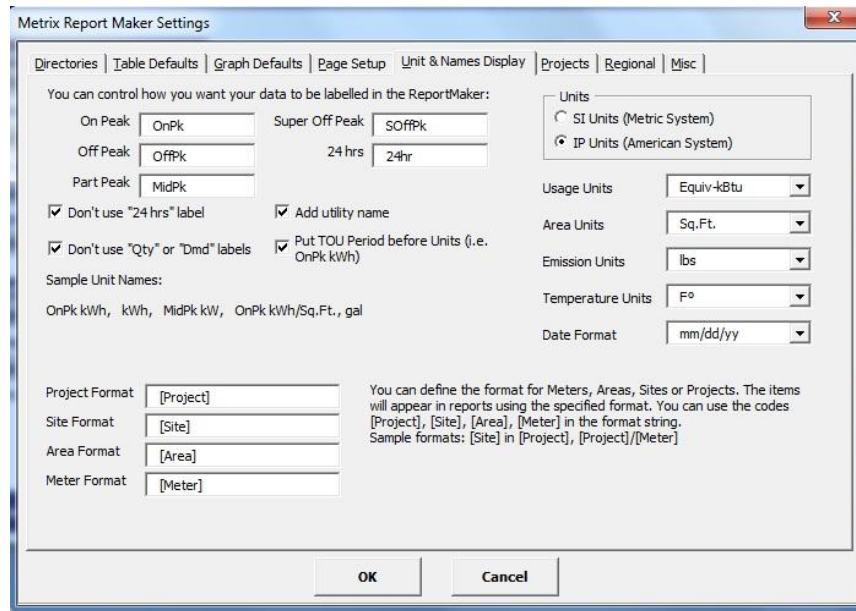
Figure 77: Advanced Page Setup Menu

Unit & Names Display Settings

Selecting the 'Unit & Names Display' tab allows you to control how you want your energy and cost units to appear in your reports. You can type in the appropriate labels for the different pieces of data. You also have several options below these fields that allow you to add more or less information to your report, whether you want to see the name of your project appear in the report or simply the name of the meter. The 'Unit & Names Display' tab can be seen in Figure 78.

Figure 78: Report Maker Settings Dialog Box: Unit & Names Display

Project Settings

There are a few options that modify how Metrix loads data. The combine projects option only applies if you are loading multiple projects. It will treat all projects as one project.

Automatically loading selected emission units is an option that you can remove if you would like to speed up the loading process.

Figure 79: Project Settings form

Regional Settings

Select the 'Regional' tab to select the unit system you want to use, your date format, your currency unit and to select the unit in which you want to report emissions. You also have the option to choose which language your report is in as well as the Dictionary Path for literary accuracy. The 'Regional' tab is seen in Figure 80.
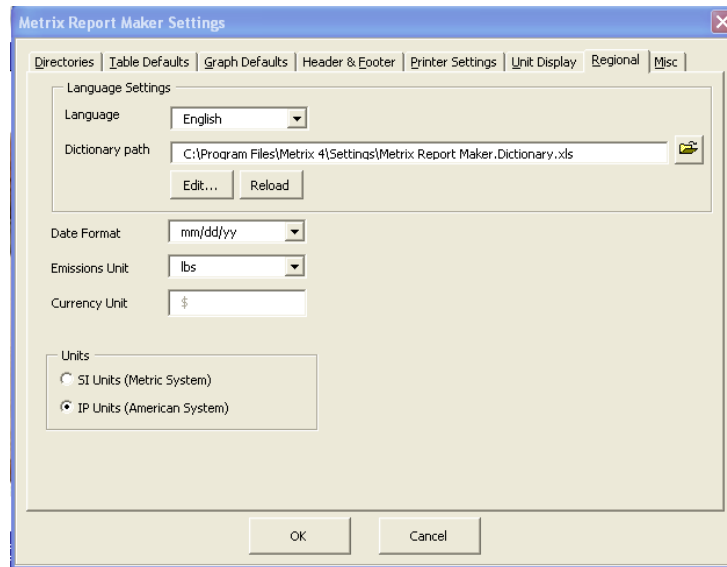

Figure 80: Report Maker Settings Dialog Box: Regional

Misc. Settings

Figure 81shows the miscellaneous options you can change through the settings menu. The first option allows you to change whether graphics are displayed on the user interface. If you change this, the pictures and logos on the Main Menu will disappear.
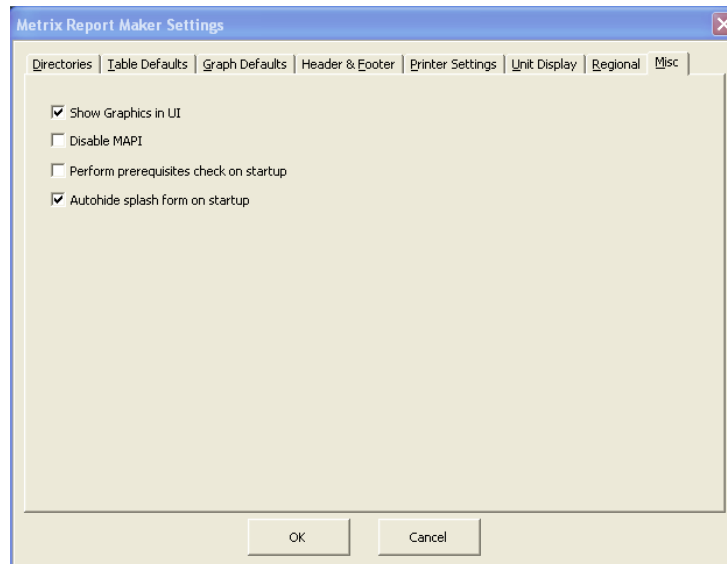

Figure 81: Report Maker Settings Dialog Box: Misc

Graph Color Settings

Select Metrix | Graph Color Settings from the menu to change the colors associated with different years, items or Scenarios. The Graph Color Settings page is shown below in Figure 82.

Figure 82: Graph Color Settings

To make changes to the color scheme, click in a cell that has a color, and then select from your Excel Menu: Format | Cells | Patterns. (A better way is to press the Fill Color tool,). Then you will see the following dialog box in Figure 83.
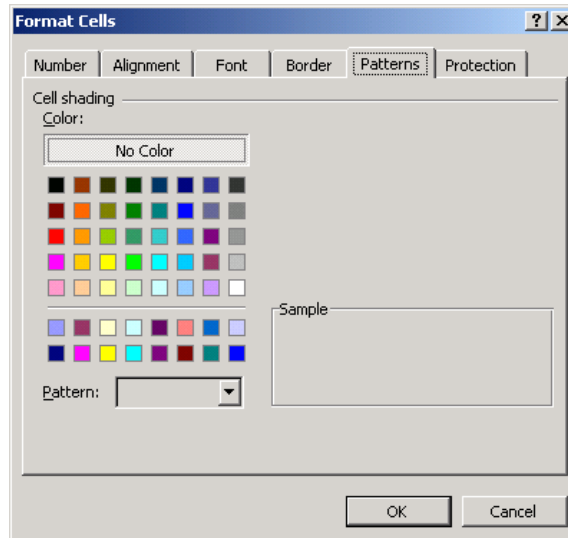
Figure 83: Format Cells Dialog Box

Select the color you wish to assign to the year, scenario or item. Do this for each color you want to reassign. Once you have finished reassigning colors, press the "Save New Color Scheme" button. You will be prompted to name the color scheme. All reports following will use this new color scheme. Be sure to save the Report Maker, or your new settings will be lost.

You can also retrieve previously saved color schemes by pressing the "Select Existing Color Scheme" button.

Emissions Factor Pages

If you want to report on emissions, then you might want to update the emissions factors in the emissions pages. To get to the electric emissions factors page, select the Metrix dropdown menu from the toolbar, then Electric Emission Factors. Or you may select Electric Emission Factors from the main menu on the front page. You will see the following page:

METRIX REPORTMAKER
For use with Metrix4™ Utility Accounting System
ABRAXAS ENERGY CONSULTING

Back to Main Menu — **Elec Emission Factors**

State	Abbr								
Mississippi	MS	1.075	1.26138E-05	0.0022	0.0002	0.0046	0.0001	2.26787E-08	9.40017E-10	3E-08
Missouri	MO	1.783	3.60178E-05	0.0061	0.0003	0.0119	0.0001	8.1065E-08	3.03757E-09	1E-07
Montana	MT	1.553	4.97568E-05	0.0048	0.0004	0.0049	0.0007	5.55141E-08	2.07245E-09	8E-08
Nebraska	NE	1.288	3.57266E-05	0.0049	0.0003	0.0066	0.0001	9.51408E-08	3.60416E-09	1E-07
Nevada	NV	1.875	2.70509E-05	0.0042	0.0003	0.005	0.0004	4.45575E-08	1.78573E-09	6E-08
New Hampshire	NH	0.852	2.27775E-05	0.0054	0.0001	0.0116	4.89046E-05	5.51917E-08	9.44361E-09	1E-07
New Jersey	NJ	0.774	1.24061E-05	0.0012	0.0001	0.0021	0.0001	2.00997E-08	6.0455E-09	6E-08
New Mexico	NM	1.405	0.0001	0.0102	0.0007	0.0096	0.0001	5.27178E-08	2.11276E-09	8E-08
New York	NY	1.036	1.44386E-05	0.0014	0.0001	0.0037	3.16977E-05	2.50208E-08	5.07251E-09	6E-08
North Carolina	NC	1.35	1.50517E-05	0.0049	0.0001	0.0075	0.0002	3.78095E-08	1.40785E-09	5E-08
North Dakota	ND	2.303	0.0002	0.031	0.0018	0.0544	0.0009	2.42378E-07	9.03926E-09	3E-07
Ohio	OH	1.807	2.29309E-05	0.0069	0.0002	0.0159	0.0002	4.43209E-08	1.65093E-09	6E-08
Oklahoma	OK	1.672	3.59717E-05	0.005	0.0004	0.0055	0.0001	2.85713E-08	1.17165E-09	4E-08
Oregon	OR	0.235	1.42315E-06	0.0002	1.23191E-05	0.0002	6.0039E-06	5.64948E-09	2.09412E-10	8E-09
Pennsylvania	PA	1.286	2.52103E-05	0.0043	0.0002	0.0171	0.0005	5.30803E-08	3.13375E-09	8E-08
Rhode Island	RI	1.091	1.82597E-06	0.0002	3.19545E-05	0.0001	2.73896E-06	1.52672E-09	1.03755E-08	6E-08
South Carolina	SC	0.688	1.20599E-05	0.003	0.0001	0.0058	0.0001	4.8002E-08	1.79689E-09	7E-08
South Dakota	SD	0.912	2.09087E-05	0.0046	0.0002	0.0091	4.59991E-05	7.66985E-08	2.93658E-09	1E-07
Tennessee	TN	1.335	2.33118E-05	0.0075	0.0002	0.012	0.0007	2.20365E-08	8.21831E-10	3E-08
Texas	TX	1.552	3.0901E-05	0.0039	0.0004	0.0047	0.0002	1.7394E-08	7.91862E-10	3E-08
Utah	UT	1.99	0.0001	0.008	0.0005	0.0037	0.0004	9.46131E-08	3.5191E-09	1E-07
Vermont	VT	0.159	0	1.4211E-05	1.18425E-06	7.89499E-07	0	0	0	0
Virginia	VA	1.107	8.83103E-06	0.0026	0.0001	0.0052	0.0001	2.67249E-08	9.95925E-10	4E-08
Washington	WA	0.306	3.12165E-06	0.0003	2.67636E-05	0.0012	3.21117E-05	2.66678E-09	9.8851E-11	4E-09
West Virginia	WV	2.005	0.0001	0.0222	0.0007	0.0488	0.0007	1.36484E-07	5.08377E-09	2E-07
Wisconsin	WI	1.343	2.67814E-05	0.0038	0.0002	0.0073	0.0001	7.89828E-08	2.95134E-09	1E-07
Wyoming	WY	2.194	0.0001	0.0182	0.0012	0.0175	0.0013	1.03171E-07	3.84065E-09	1E-07
US AVG	US AVG		3.30144E-05	0.005059225	0.00027291	0.008804286	0.000221692	5.00165E-08	4.18145E-09	8E-08

Notes:
1) The emission factors for criteria pollutants are based on annual emissions from the 1994 National Emissions Trends Inventory (USEPA, 1997).
2) The emission factors for toxic pollutants are base on annual emissions from the National Toxics Inventory (NTI), Version 9702
3) The emission factors were calculated using the state annual electricty sales from 1990 and 1994 for toxic and criteria pollutant EFs, respectively
4) The CO2 emission factors are from the U.S. DOE / EIA 1605(b) GHG Reprting Program

Figure 84: Electric Emissions Factors Page

We have stocked the page with Emissions AP Factors from studies conducted by the Leonardo Academy for the US EPA and DOE. Emissions AP Factors are listed for the US only. If you want to list other emissions factors for other areas, such as Canadian provinces, or other areas, you can list the States/Regions and their corresponding AP Factors. Feel free to delete any rows after row 3. We have protected row 3 and above.

To get to the Fossil Fuels Emission worksheet, select Gas Emissions Factors from the Metrix menu or you may select Gas Emission Factors from the main menu on the front page. You will then see the following worksheet in Figure 85. If you can find more appropriate data, you can change the emissions factors. The table was stocked with numbers from US EPA and US DOE studies.

Note: To run a report for emissions, the correct locations will need to be defined in the Area forms in your Metrix project.

# BTU in table	1000000			
Emissions Units	**lbs**			

Fuel Type	Fuel Code	Emission Type	lbs per million Btu	Notes
Natural Gas	V	CO2	117.08	
Natural Gas	V	NOx	0.15	
Natural Gas	V	N2O	0.00216	
Natural Gas	V	SO2	0.0006	
Natural Gas	V	PM10	0.00186	
Natural Gas	V	VOC	0.00539	
Natural Gas	V	CO	0.024	
Natural Gas	V	Mercury	0	
Natural Gas	V	Cadmium	0	
Natural Gas	V	Lead	0	
Natural Gas	U	CO2	117.08	
Natural Gas	U	NOx	0.15	
Natural Gas	U	N2O	0.00216	
Natural Gas	U	SO2	0.0006	
Natural Gas	U	PM10	0.00186	
Natural Gas	U	VOC	0.00539	
Natural Gas	U	CO	0.024	
Natural Gas	U	Mercury	0	
Natural Gas	U	Cadmium	0	
Natural Gas	U	Lead	0	
Natural Gas	G	CO2	117.08	
Natural Gas	G	NOx	0.15	
Natural Gas	G	N2O	0.00216	
Natural Gas	G	SO2	0.0006	
Natural Gas	G	PM10	0.00186	
Natural Gas	G	VOC	0.00539	
Natural Gas	G	CO	0.024	
Natural Gas	G	Mercury	0	
Natural Gas	G	Cadmium	0	

Ready

Figure 85: Gas Emissions Factors Page

Special Topics

Adding your Own Macros

It is possible for someone who is familiar with Visual Basic to add their own macros to work with the Report Maker. This manual does not cover HOW to do this but we will offer a few suggestions.

If you do choose to write your own code to either customize existing reports or create new ones, we suggest that you add your code to your personal.xls. We expect the Report Maker to be upgraded from time to time, and if you had integrated your code with the existing modules, you might have a difficult time extracting your code from the old Report Maker to add to the new Report Maker.

Your macros can be more fully integrated with Metrix Report Maker by adding them to the Metrix Menu. To do this, follow the instructions in the section below.

If you come up with useful reports that you would like to share with others, please let us know, and if we like it, we will include it in the newest release of the Report Maker.

Adding Menu Items to the Metrix Menu

If you want to add a menu item to the Metrix menu, select Metrix | Customize | Metrix Menu from the Excel menu. Just insert a row for each menu item that you want to add. There are notes on the headers which describe what goes into the different columns.

Your changes will not be in effect until you reload your menu. Press the "Refresh Metrix Menu" button to remove and reload the Metrix menu and you will see your changes.

Table 5: Adding Menu Items

Level	Caption	Position/Macro	Divider	Face ID
1	&Metrix	10		
2	&Go To			
3	&Front Page	GoHomeSub		942
3	&Report Selector	CreateReportsButtonSub		956
3	&Gas Emission Factors	GoToGasEmissions		
3	&Electric Emission Factors	GoToElecEmissions		
2	&Graph&Color Settings	GoToColorsSub	TRUE	417
2	&Report Maker Settings	OpenSettingsForm		548
2	&Load Data	LoadDataButtonSub	TRUE	23
2	&Make Reports	CreateReportsButtonSub		436
2	&View Reports	ViewReportsButtonSub		2103
2	&Print Reports	PrintReportsButtonSub		1707
2	&Export Reports	PublishReportsButtonSub		285
2	&Delete A Report	DeleteAReport	TRUE	
2	&Change Report Headers/Footers	ChangeAllHeadersAndFooters		
2	&Change Report Paper Size	ChangeAllPaperSize		
2	&Customize		TRUE	
3	&Metrix Menu	GoToMenuSheet		
2	&Help		TRUE	
3	&Technical Support	TechSupportSub		

Using Memorized Reports

If you need to run a similar report multiple times, whether it's across different projects or within the same project, we suggest that you use memorized reports. With memorized reports you can run a report and then save the report so that it can be ran later. Anytime a report is created the last menu screen will ask you if you want to memorize the report you just made. If you click yes, the following menu will pop up as seen in Figure 86.
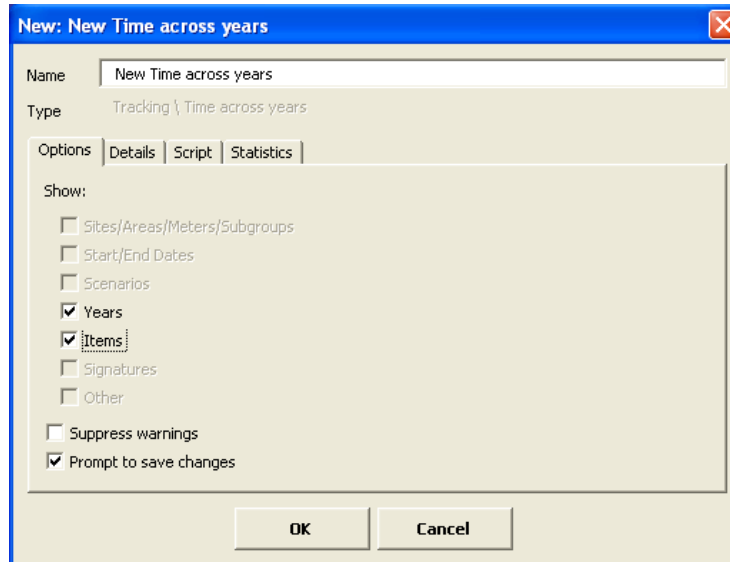

Figure 86: Memorized Reports Options Form

This menu allows you to customize your memorized report. On the top of the menu you can name this report anything you would like. Adding a personalized name to this report will make it easier to find for future use.

Underneath the name of the report there are four tabs containing different information. The Options Tab as seen in Figure 86 shows what exactly is being shown in the report and allows you to add and remove variables at your choosing. Selecting the Details Tab will allow you to add a description or notes about the report. The Script Tab contains the code for the report and really should be left alone unless you are a programmer who feels the code needs adjusting. And the Statistics Tab notes how many times the report has been run, the success and fail rate of the report, and when the report was created and last updated. Screenshots of each of these tabs are including in the Figure 87, Figure 88, and Figure 89 respectively.
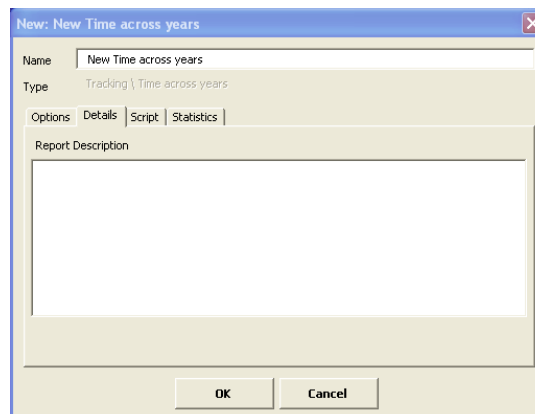

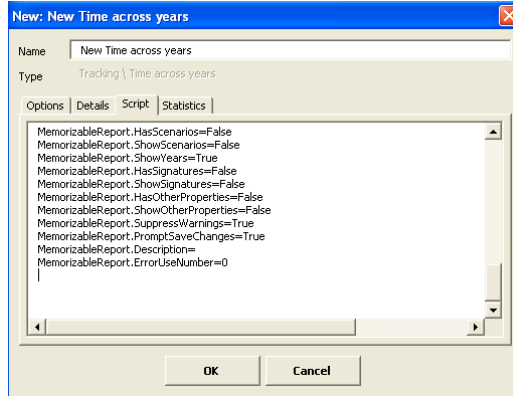Figure 87: Details Tab of the Memorized Reports Menu

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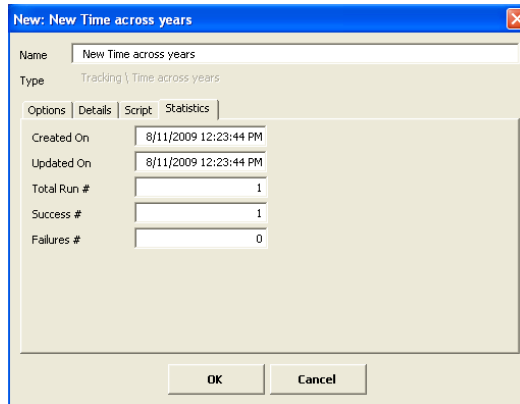Figure 88: Script Tab of the Memorized Reports Menu

Figure 89: Statistics Tab of the Memorized Reports Menu

The types of settings that a memorized report will save are table/chart options, and report parameters (which include bill assignment and scenario settings) depending on the type of report memorized. If you choose to memorize the report, you can later access it in the "Fast Reports" section. A memorized report will be displayed in the Fast Reports section as seen in Figure 90.
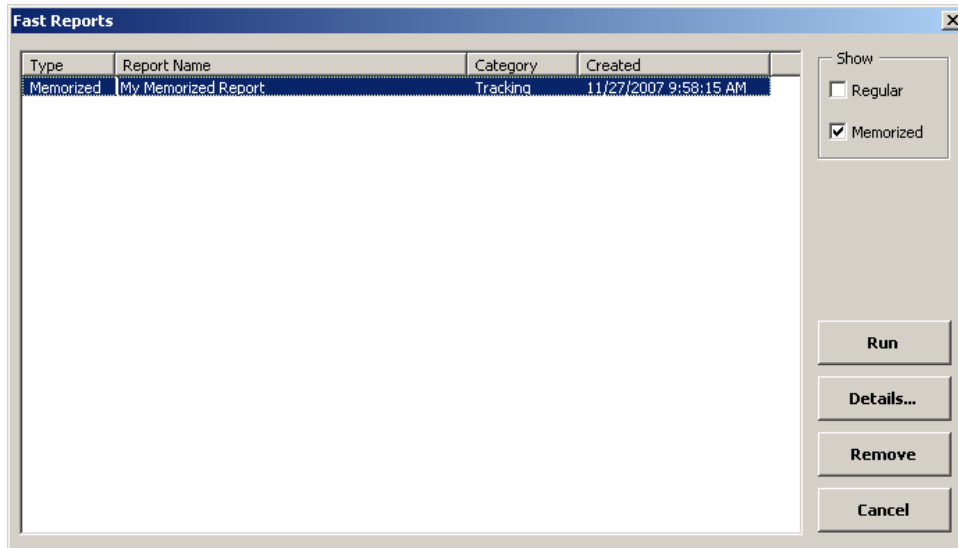

Figure 90: Fast Reports Selection Form

Sets: Running Multiple Memorized Reports at Once

In Report Maker, you have the option to run multiple memorized reports at once. This option means time won't be wasted clicking fast reports, running the report and waiting, then having to repeat the process for each memorized report. To use this feature, you must first create memorized reports (see the see section Using Memorized Reports on page 71).

Once you have memorized reports, you will need to create a set. To do this click 'Fast Reports' and you will see the figure below:
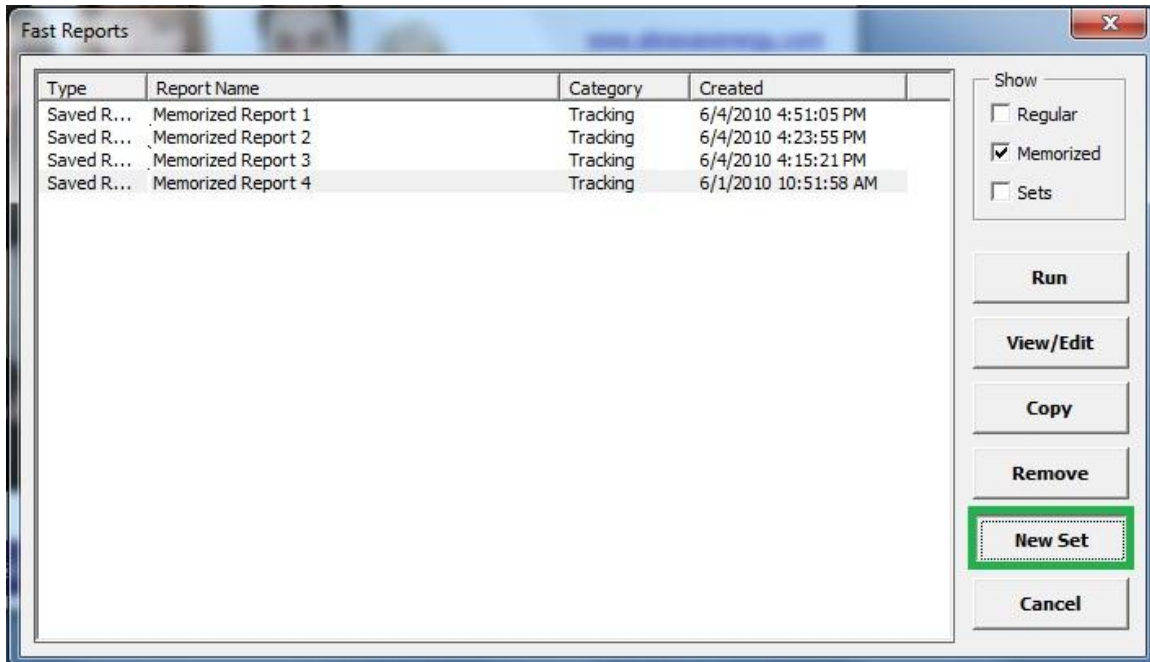

Figure 91: Fast Report Screen

In the Fast Reports windows, to see only the sets that you have, you can use the Show box and have only the box for "Sets" checked.

To run a set, it is the same as running a regular report. Click on the set that you would like to run, and then click the button 'run'

To add a new set, click on the button 'New Set' and you will see the following screen:
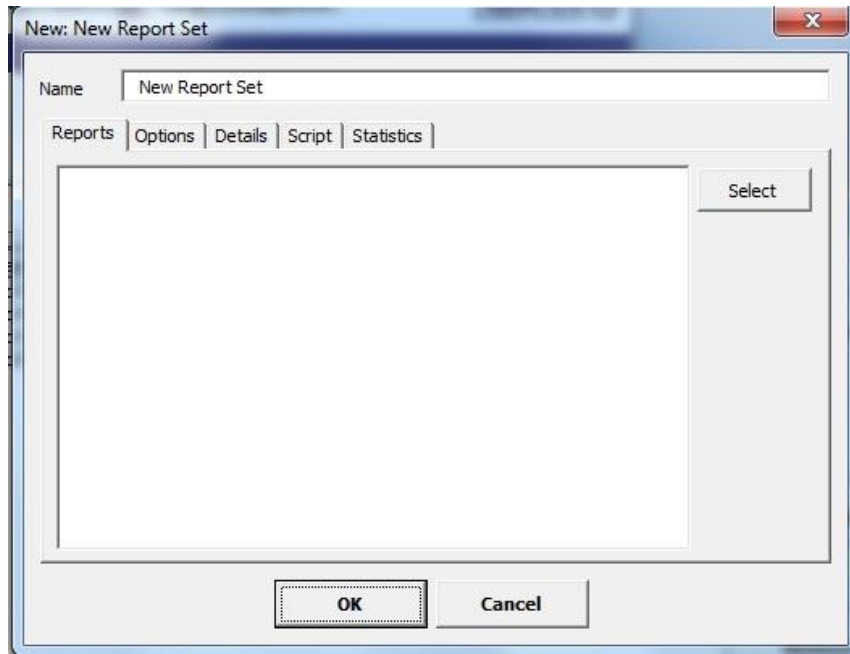
Figure 92: New Report Set

To name the report, type the name in the text box at the top of dialog box. The default name is New Report Set. Each set does require a unique name.

To select the memorized reports to add to the set, go to the 'Reports' tab and click the button 'Select'. The following dialog box will appear:
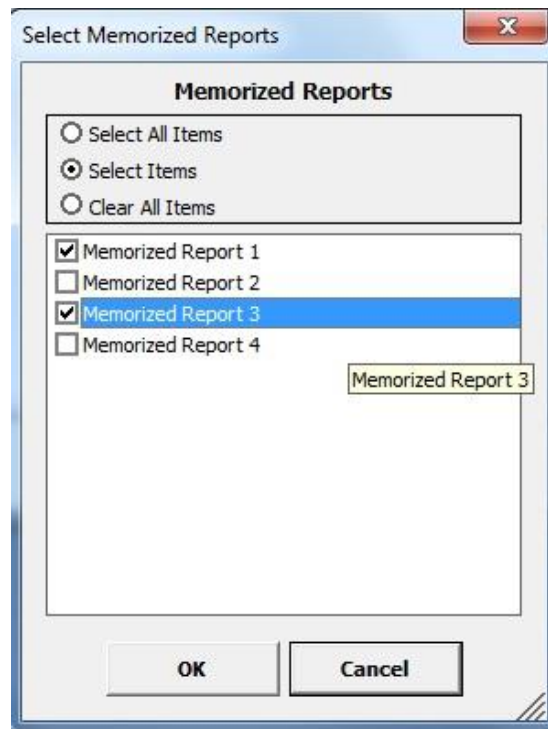

Figure 93: Selecting Memorized Reports

From this dialog box, you will be able to select which reports to include in the set. To confirm, select 'OK'.

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Run Last Report: Repeat the Previous Report

In Report Maker, it is common to want to re-run the last report exactly without having to go through the effort of selecting all of the same report parameters. Run last report is a new feature that allows you to recreate the last report you ran quickly and effortlessly.

Once you have run your first report, select Fast Reports from the main page and select Run Last Report. The report parameters can be varied in the same way as any other memorized report, or the last report can be run exactly the same by simply clicking Run.

Modifying the Report Maker Settings in between running your first report and selecting Run Last Report will affect how the report is displayed, making it a quick and easy way to fix anything that was done in error, such as Unit Systems or Graph Color Settings.

Reporting with Groups

There are three ways Grouping works in reports:

Method	… which means …
As a Filter	You make reports as normal, but only show data associated with your particular Subgroup. Grouping works to "filter out" any data from other Subgroups.
As a Level: with one report per Subgroup	You make reports by Subgroups, rather than by Sites/Areas/Meters. One worksheet per Subgroup. This would work with Time Across Years, Scenarios and Fuel Type reports, but NOT with Time Across Items or Benchmarking reports, which can compare all the Subgroups against each other on the same worksheet.
As a Level: comparing the Subgroups against each other in one report	You make reports separating and aggregating data by Subgroups, rather than by Sites/Areas/Meters. All Subgroups selected will appear in the same worksheet. This would work with Time Across Items or Benchmarking reports only, but NOT with Time Across Years, Scenarios and Fuel Type reports, which will present one Subgroup per worksheet.

Using Groups as a Filter

You can filter reports so that only Sites/Areas/Meters associated with a Subgroup are shown. All other Sites/Areas/Meters are left out. In this example, we will compare monthly usage for only elementary schools. We report on a Site level as we entered one school per site in the Metrix project. Our selections for our report can be seen in Figure 94.

Figure 94: Selecting the Subgroup 'Elementary Schools' as a Filter

The rest of the process is the same as making any other report. However, our report will only show data for the Elementary Schools and nothing else. This can be seen in Figure 95.
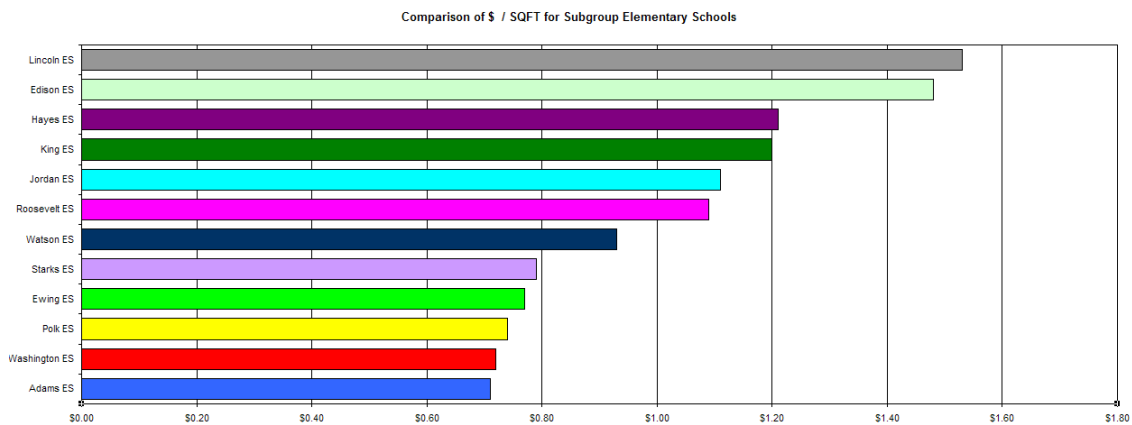

Figure 95: Graph Displaying Data for Only Elementary Schools

Using Groups as a Level—One Report per Subgroup

The other reporting method is to aggregate data into Groups, rather than into Sites/Areas/Meters. To do this, select Report by Subgroup as seen in Figure 96.

Figure 96: Choosing to Report by Subgroup for the Report Parameters

As a result, rather than getting one worksheet or graph per Site/Area/Meter, you can now get one per Subgroup.
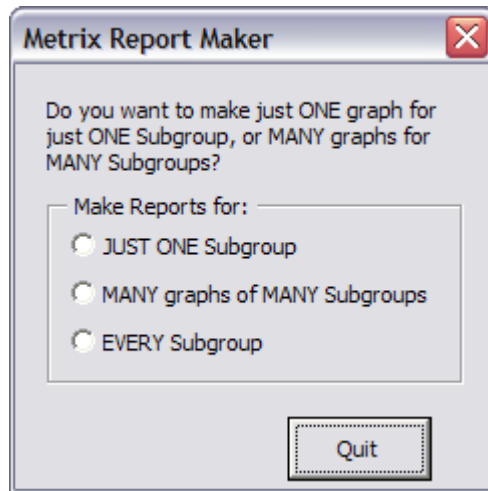

Figure 97: Menu to Choose Number of Subgroups

The menus in Figure 97 and Figure 98 allow you to choose one Subgroup or multiple Subgroups to show data for.
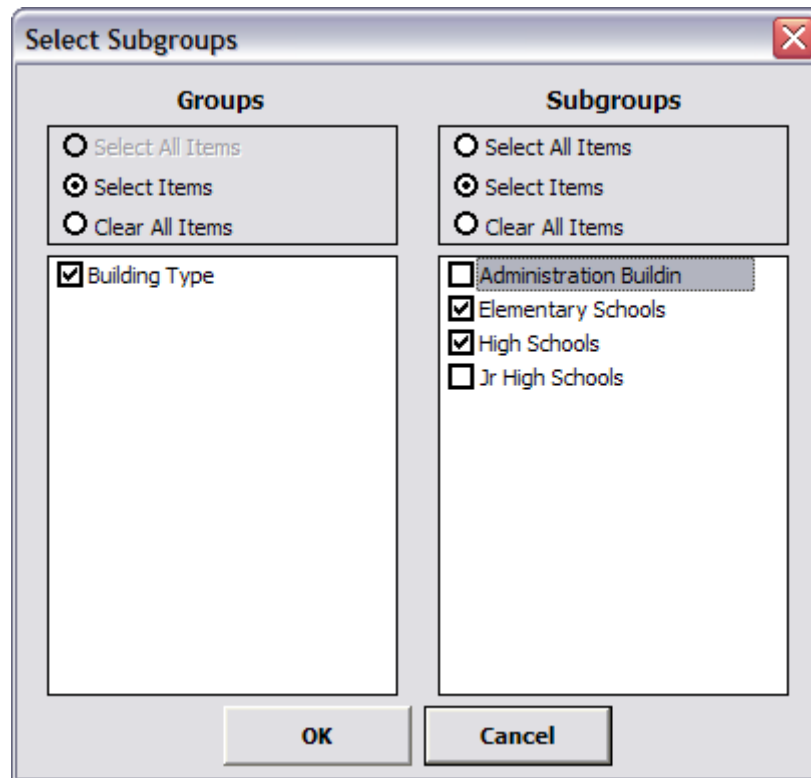

Figure 98: Menu to Choose Specific Subgroups for a Report

As you can see from Figure 98 we have chosen to display results for both the Elementary School and High School Subgroups. The report in Figure 99 shows aggregated kWh for all meters in the Elementary Schools Subgroup.
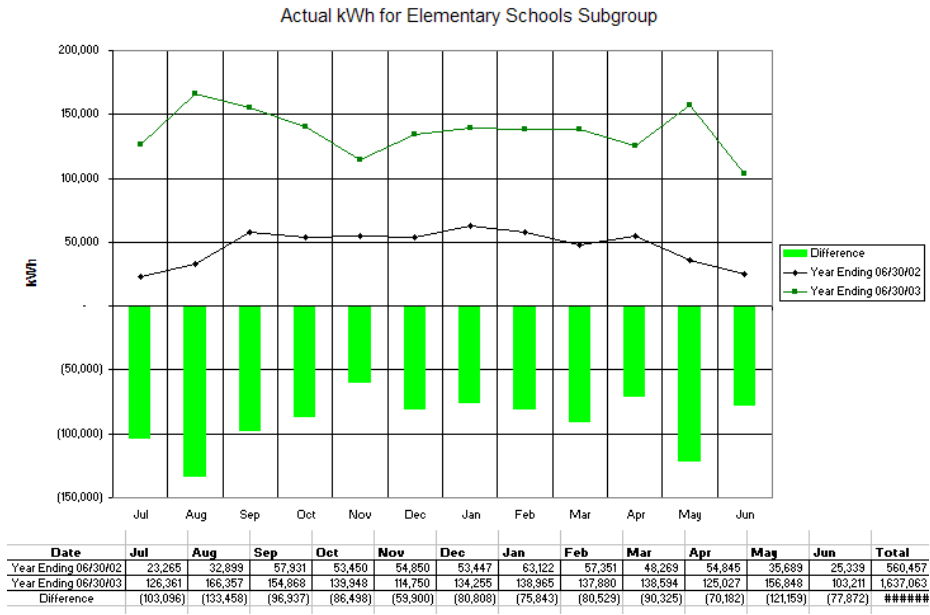
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Figure 99: Graph with Data for the Entire Elementary School Subgroup

Using Groups as a Level—Compare Subgroups in One Report

Finally, the third method is to Compare Groups in the Same Report. This can be done via the Benchmarking or the Compare Sites/Areas/Meter/Subgroups Report. Again through the options menu you will have to select to Report by Subgroup as seen in Figure 100.
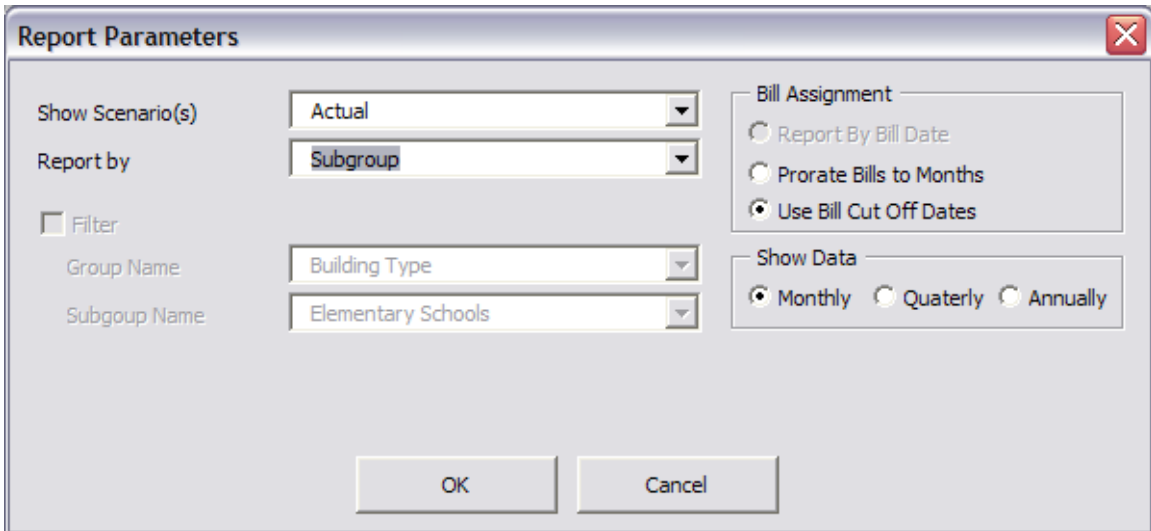

Figure 100: Choosing to Report by Subgroup from the Options Menu

Again, you can select which Subgroups to compare through the options menu seen in Figure 101. You need not compare all of them.
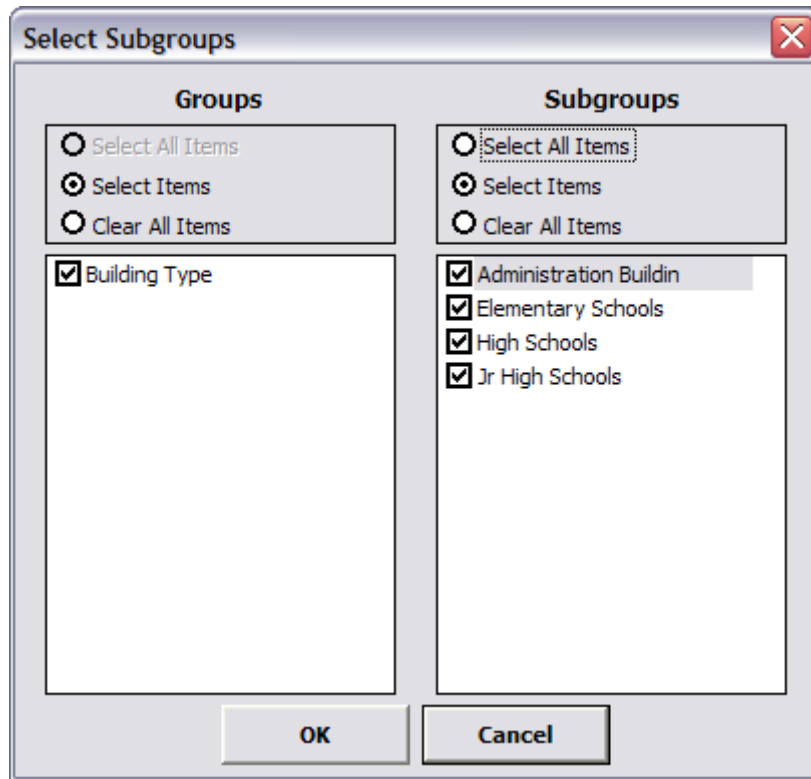
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Figure 101: Selecting which Subgroups to Include in Your Report

Once you have selected which Subgroups you want to include in your report you can finish going through the rest of the settings. The report will include a graph like the one in Figure 102 that clearly compares data for each Subgroup selected.
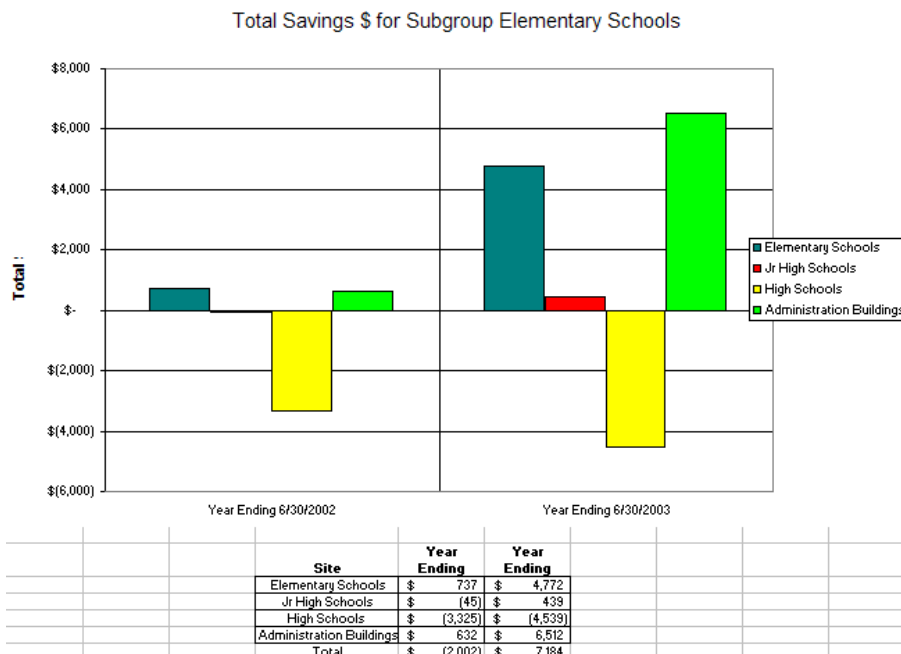

Site	Year Ending	Year Ending
Elementary Schools	$ 737	$ 4,772
Jr High Schools	$ (45)	$ 439
High Schools	$ (3,325)	$ (4,539)
Administration Buildings	$ 632	$ 6,512
Total	$ (2,002)	$ 7,184

Figure 102: Graph Comparing the Total Savings for Each Subgroup

Adding Logos to Reports

The logos feature of Metrix Report Maker will allow you to add your company logo to the header of your reports improving the professional appearance of your reports.

To set up your logo, click on "Report Maker Settings" from the main menu of Metrix Report Maker. The "Report Maker Settings" window will pop up.
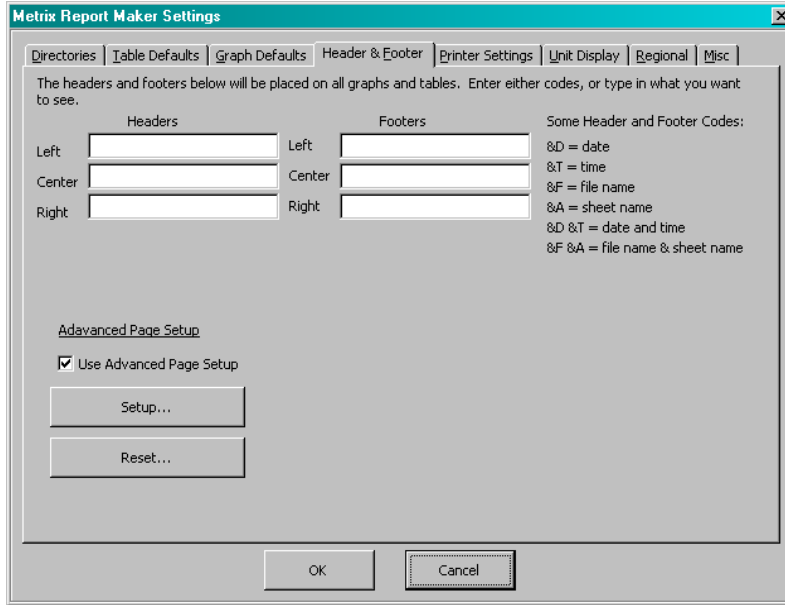

Figure 103: Header and Footer Tab of Report Maker Settings

With the "Header & Footer" tab open (Figure 103); make sure the "Use Advanced Page Setup" checkbox is selected. Click "Setup…" to configure the Advanced Page Setup. A print preview of the current advanced page setup will open as seen in Figure 104.
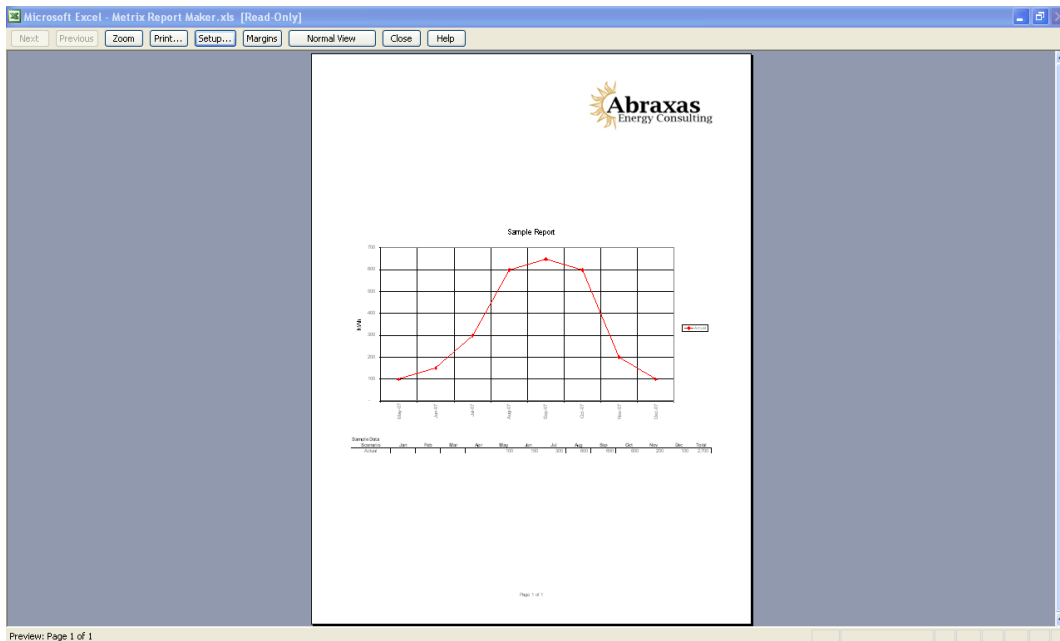

Figure 104: Print Preview Screenshot

To make changes click on the "Setup…" button at the top of the screen. The "Page Setup" window will open. Click on the "Header/Footer" tab and you should see the screenshot shown in Figure 105. Click the "Custom Header" button to add a logo or text to the header of you Reports.
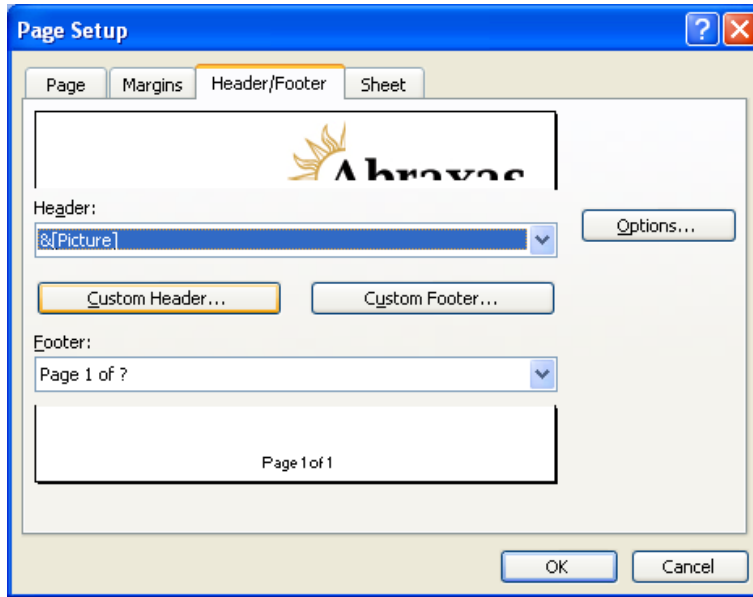

Figure 105: Header/Footer Tab in Page Setup Dialog Box

In the Custom Header window add any desired text to the Left, Center, or Right section by simply typing it into the appropriate text field. To add an image, select the field where you would like the image to appear and click on the picture icon as seen in Figure 106. Click OK to save your Custom Header settings.
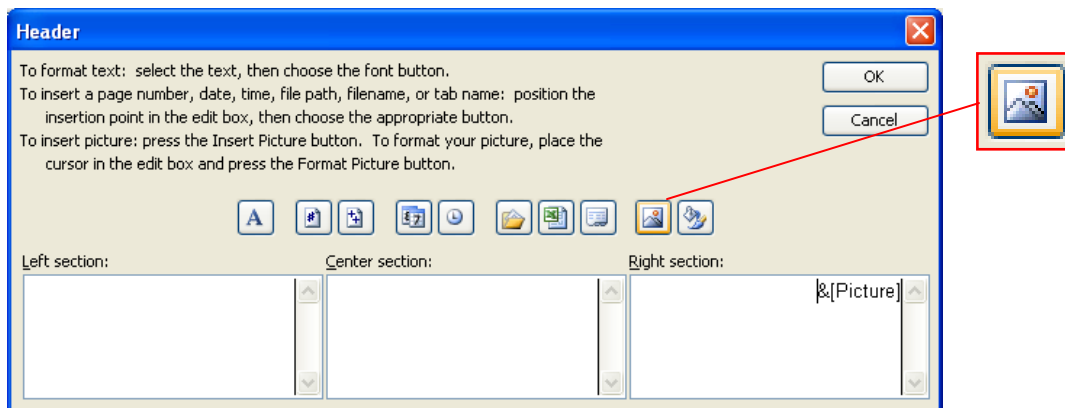

Figure 106: Header/Footer Tab in Page Setup Dialog Box

Set up the Custom Footer to the desired configuration using the same steps used to set up the Custom Header, and then click "OK" to save your settings and exit the Page Setup window. The print preview will now include your header/footer settings. Next, click "Close" to exit the print preview and "OK" again to save your Metrix Report Maker Settings.

Which Report Should I Use: Utility Bill Comparison vs. Cost Avoidance Reports

If Cost Avoidance is not being performed, then there are several reports that should be skipped, as the results would likely not make any sense. Table 6 below lists reports that are applicable to Utility Bill Comparison, as opposed to those applicable to Cost Avoidance.

Table 6: List of Reports Applicable to Utility Bill Comparison and Cost Avoidance

Report Type	Utility Bill Comparison Only	Cost Avoidance (and Utility Bill Comparison)
Time Across: Years	X	X
Time Across: Scenarios		X
Time Across: Items	X	X
Time Across: Utility Type	X	X
Comparison Report		X
Meter Detail Report		X
Bill Ledger Report	X	X
Tuning Contract		X
Verification Summary		X
Best/Worst Sites/Areas	X	X
Diagnostics Report	X	X
Missing Bills Report	X	X
Custom Report	X	X
Energy Star	X	X
Pie Chart	X	X
Site Comparison	X	X

If not using Metrix for Cost Avoidance, do not display the "Baseline" or "Target" scenarios in your reports, or any related scenarios, such as "Baseline/Actual". Whenever a "Scenario" selection is seen, always pick "Actual" or "SimActual" as a secondary choice.