

ENERGYBENCHMARK

OABA
ENERGY BENCHMARKING

USER MANUAL

Version 3.0.1



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TABLE OF CONTENTS

INTRODUCTION	3
GETTING STARTED	3
SECTION 1. LOGGING IN	4
SECTION 2. DEMO MODE	5
SECTION 3. REGISTRATION	6
SECTION 4. THE MAIN SCREEN	7
SECTION 4.1. ACCOUNT INFORMATION	8
SECTION 4.2. SITE SPECIFICS	9
SECTION 4.3. PRODUCTION	10
SECTION 4.4. ENERGY EXCLUSIONS	11
SECTION 4.5. ENERGY EFFICIENT TECHNOLOGIES (EET).....	12
SECTION 5. ENERGY COST SCENARIOS	13
SECTION 5.1. ENERGY COST DIFFERENCE REPORT	14
SECTION 6. ENERGY PRODUCTION DATA ENTRY	14
SECTION 6.1: ENTERING MONTHLY DATA	16
SECTION 6.2: ENTERING DATA FOR A FULL YEAR	17
SECTION 6.3: REMOVING DATA	17
SECTION 7: REPORTS AND ANALYSIS	18
SECTION 7.1. REPORT 1: ENERGY BENCHMARK COMPARISON REPORT	19
SECTION 7.2. REPORT 2: ENERGY PRODUCTION ON A SINGLE GRAPH	21
SECTION 7.3. REPORT 3: ELECTRICITY REPORT	22

INTRODUCTION

The web application found at www.energybenchmark.com/FeedMills is designed as a tool to promote improvements in the energy efficiency of a feed mill, feed storage, or fertilizer processing plant, thus reducing overall costs incurred by the site operator. The application is in checklist format and allows the user to define all aspects of their site and operation through user-friendly check boxes. Checklists are available for site type, processes occurring, and products produced. In addition, energy efficient technologies can be recorded, enabling the user to define which energy saving practices have already been implemented at their site.

Once a site has been fully defined, energy usage and production information must be inputted. The standard input format is done on a monthly basis, but a yearly basis can be used. However, for this site, it is recommended that a monthly basis be used. It is important to enter all energy usage, production, and price information in order to make comparisons to other sites accurate and consistent. In some locations the electrical or natural gas supply may also supply additional buildings not directly tied into the site operation, such as a house located on the property. In these cases, an energy exclusion section allows for energy used by non-production related buildings to be defined and deducted from the overall site energy usage.

Following the input of all energy and production information, the database of sites can be scanned in order to generate a report indicating the efficiency of the users' site compared to other sites in the system, hence the name energy benchmark. Filtering allows for very specific comparisons to be conducted within the system. Although the benchmark report makes a comparison to other sites, names remain anonymous and the user only sees their position on the list. Other useful reports specific to the users' site can also be generated using the system.

GETTING STARTED

It is possible to enter the site in a demo mode. While in demo mode, all aspects of the site, including the reports, can be used. However, the information in demo mode is randomized and benchmark reports generated hold no bearing. Once registered and logged in, the comparison report will access real data and provide a true energy efficiency comparison.

Use the demo mode in combination with this user manual to become familiar with the features of the site. Do not spend a lot of time inputting information in the demo mode due to the fact that the data is cleared or written over randomly after the session ends.

Once registered, follow the sections in this manual to set up your site and begin entering data on a regular basis.

SECTION 1. LOGGING IN

Go to www.energybenchmark.com/FeedMills and you will get the following screen:

The screenshot shows the Energy Benchmark Website interface. At the top, there is a navigation bar with the Ontario Agri Business Association logo, the text "Energy Benchmarking", and images of hands holding a piglet, a feed mill, and a greenhouse. Below this are links for "Agviro", "OABA", and "Contact Us", and the "AGVIRO INC." logo. A green banner reads "Welcome to the Energy Benchmark Website". The main content area is divided into sections. On the left, there is a "Demo" button with a callout box that says "Use the demo mode to take a tour of the site". In the center, there is a "Register Now" button with a callout box that says "Click here to download the registration form or to register on-line". On the right, there is a "For Registered Users" section with a login form containing fields for "Energy Benchmark Login:", "User Name:", "Password:", and a "Login" button. A callout box next to the login form says "Registered users can login here using their username and password". At the bottom, there are links for "About Us", "Site Map", "Privacy Policy", "Contact Us", and "Last updated: June 2006".

From this site the user can access the demo mode, access the registration page, or login if already a registered user. If incorrect login information is inputted the user will be directed back to this page with an accompanying error message.

SECTION 2. DEMO MODE

The demo mode is to be used as a preview of the site or to become familiar with the site before entering actual site information. Clicking the “Demo” button from the login screen will bring up the following page:

Energy Benchmarking

Agviro OABA Log Out

Demo Mode:

You may enter the site as a Demo user by choosing one of the following options:

Option	Description	Begin
Clear All Data	This mode starts with a clean slate. Pretty much the same as it would be when you register and receive your official log-in. For a quick tour, you may be better off selecting the next option (you can still modify the data that is randomly generated by the system).	<input type="button" value="Option1"/>
Generate Site Data	This option will fill the database with reasonable values (using a random function), allowing you to examine the output generated by the program. If you're more interested in the output than the way data is entered, use this option. Note that you can easily modify the data that is generated and experiment with different values.	<input type="button" value="Option2"/>

If you have sample data to enter, click Option 1 to login to a blank site

For a quick tour allow the computer to generate random data and login to a sample site

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Demo mode can function based on two different options: clear all data, or generate site data. Option 1, clear all data, logs the user into the site with no information present. In theory, it simulates the process of starting up a new site. If you have sample data you would like to input into the site you may use Option 1. Option 2, generate site data, logs the user into the site with randomized site data. This randomized data can be used to generate site reports and comparisons. Option 2 is recommended for a quick tour of the website’s features.

SECTION 3. REGISTRATION

Once you have familiarized yourself with the site and like what you see, please sign up using the registration form. Clicking the “Registration” button from the login screen brings up the following page:



Welcome to the Energy Benchmark Registration Page

Download Form (Fax or Mail): [\[Word .doc 667KB\]](#) or [\[Adobe .pdf 292KB\]](#) or complete the form below.

YES - sign us up for OABA's Energy Analysis Benchmarking Software

Firm Name:

Contact Name:

Telephone: Ext. Fax:

Mailing Address:

Download registration form for fax or mailing here. Available as a pdf or word doc

Site #	Site Location (town)	Site Contact Name	Site Contact Email	Applicable Registration Fee	Total Payable
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="radio"/> \$120.00 (OABA Member) <input type="radio"/> \$180.00 (Non-Member)	\$ <input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="radio"/> \$120.00 (OABA Member) <input type="radio"/> \$180.00 (Non-Member)	\$ <input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="radio"/> \$120.00 (OABA Member) <input type="radio"/> \$180.00 (Non-Member)	\$ <input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="radio"/> \$120.00 (OABA Member) <input type="radio"/> \$180.00 (Non-Member)	\$ <input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="radio"/> \$120.00 (OABA Member) <input type="radio"/> \$180.00 (Non-Member)	\$ <input type="text"/>
6	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="radio"/> \$120.00 (OABA Member) <input type="radio"/> \$180.00 (Non-Member)	\$ <input type="text"/>
				Sub-Total	\$ <input type="text"/>
				6% GST (GST Registration # R8899706727)	\$ <input type="text"/>
				TOTAL	\$ <input type="text"/>

Information fields if online registration is chosen. If you do not wish to register online, these fields do not need to be filled out.

Check here if you would like data entry to be completed by Agviro Inc. at a cost of \$100.00 per site location per year.

Agviro Inc. will contact you to schedule data entry.

Submit Reset

After you are done filling out the registration form click here to submit.

Payment (cheques made payable to OABA) to:
Ontario Agri Business Association
Suite 104 - 160 Research Lane,
Guelph, Ontario
N1G 5B2
 Fax: (519) 833-8889

SECTION 4. THE MAIN SCREEN

The main screen is the base for navigating through the website and managing your facility information. Once logged in as a registered user, the following screen should appear:

Use the navigation bar to move between different parts of the website.

Use the edit buttons to modify information on account, site specifics, products, energy exclusions, and energy efficient technologies


A brief summary appears for each of the 5 site description categories

Site Description		
Account Info	Site Specifics	Products
<p>Edit</p> <p>Demo15 Demo Company 15</p> <p>Phone: Fax: email:</p> <p>Contact: Phone: x: email:</p>	<p>Edit</p> <p>Feed Mill-Hammer Mill Feed Mill-Pelleting (Expanding / Expanding)</p>	<p>Edit</p> <p>Wheat Corn</p>
<p>Energy Exclusions</p> <p>Edit</p> <p>House-Gas 5000 m³ Natural Gas House 20000 kWh Electricity</p>	<p>Technologies</p> <p>Electrical: Standby Shutdown Electrical: Variable Freq. Drives Electrical: Demand Management Complete Insulation</p>	





Selecting any of the edit buttons will bring up a new page corresponding to category selected. Each of the categories is covered in more detail in the following sections.

SECTION 4.1. ACCOUNT INFORMATION

Upon registering, the first section that should be filled out is the account information. This section is where any contact and address information is inputted. Passwords may also be changed in this section. Contact the site administrator (general@agviro.com) if you lose your password and need it to be reset.



Energy Benchmarking



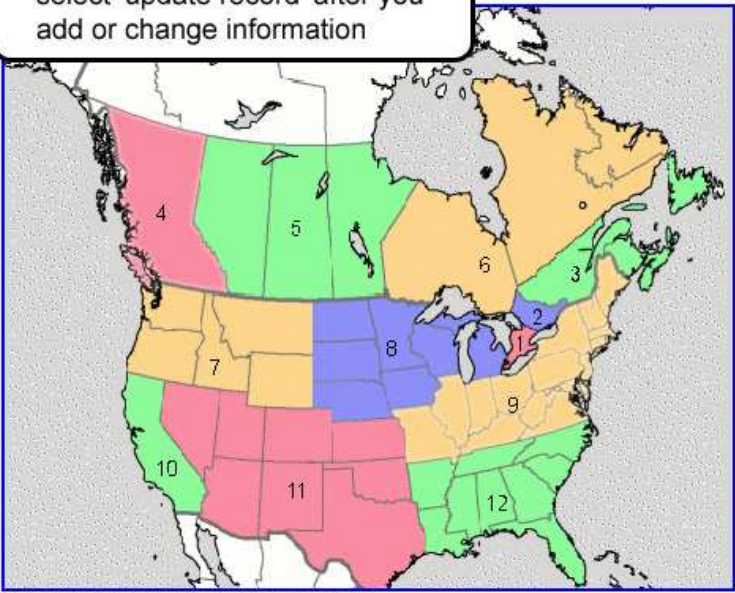
Agviro OABA Main Page Energy Cost Sc... d Analysis Log Out

Edit Account Information

Company Name:	User Manual Demo
Address 1:	367 Gordon Street
Address 2:	
City:	Guelph
Province/State:	Ontario
Postal/Zip Code:	N1G 1X8
Country:	Canada
Phone:	519-836-9727
Fax:	
email:	general@agviro.com
Site Age (years):	16
Site Location:	1
Contact Name:	
Contact Phone:	
Contact Phone Ext:	
Contact Email:	

Update record

Fill in user information here. Site location can either be filled in or selected on the map. Be sure to select 'update record' after you add or change information



Click on Map to Set Site Location

Change Password

Old Password	<input type="password"/>
New Password	<input type="password"/>
New Password Again	<input type="password"/>

Update Password

Passwords can be changed in this section. Once a password is changed it will not be known by the administrator. If you need a password reset contact the administrator at general@agviro.com

SECTION 4.2. SITE SPECIFICS

Use the expandable Tree Diagram to define your site. Place a check mark in each box that applies to your site. Do NOT collapse any section that has a check mark in it or it will not be saved properly. Click on "Save Changes" when your site has been completely defined. Please notify the site administrator if there are any aspects of your site that do not fit into the information provided here. The site administrator can certainly add additional segments as needed. Be sure to define your site as completely and accurately as possible since this information is used in the filtering process. The accuracy of the comparison between your site and others similar to yours depends on the comprehensiveness of the site specifics.

The screenshot shows the 'Energy Benchmarking' website header with the Agviro logo and navigation links: Agviro, OABA, Main Page, Energy Cost Scenarios, Energy Data Entry, Reports and Analysis, and Log Out. Below the header is the 'Site Specifics' section, which contains a tree diagram of expandable categories. The categories and their sub-items are:

- Grain Elevator
 - Grain Storage
 - Aeration Fans
 - Elevator
 - Dryer
 - Grain Cleaner
- Feed Mill
 - Roller
 - Hammer Mill
 - Steam Flaking
 - Feed Drying / MUA Htg
 - Micronizing
 - Pelleting (Extruding / Expanding)
- Warehouse
 - Bulk Storage
 - Heated Storage
 - Package Storage
- Fertilizer Plant
 - Bulk Storage
 - Bag Storage

Annotations on the screenshot include:

- A callout box with an arrow pointing to the checkboxes: "Place a checkmark in each item that applies to your site. Clicking on the checkbox will toggle if on and off. Do not collapse a section with a checkmark".
- A callout box with an arrow pointing to the 'Changes' button: "Click on save changes after you have checked all information regarding your site".

SECTION 4.3. PRODUCTION

Please select the various products that you produce. Keep in mind that every check mark you place on this screen will require the entry of a value and units of measure for each month of data that you enter later on. At the same time, it is very important that all production that takes place is entered each month. You may want to use the “Other” category to ensure you account for **all** production. As certain reports are on the basis of energy used per quantity produced, all production must be reported for accurate comparisons. You probably already have a system in place for recording monthly production and processing. It would be best to set up your production records in the energy benchmark program to match the production records you already keep. Note that it is possible to add more products to this page. Let the site administrator know if you need to track a product that is not already here. Note that once you have entered data for production, it is not recommended to “uncheck” a product on this page since those production records will still be in the database allocated to you site, but they will not show up in the Energy Data Entry screen. If you wish to remove a product you must first remove all data relating to it from the Energy Data Entry screen. Contact the site administrator if significant changes need to be made to the way you keep production records.

The screenshot shows the 'Edit Commodities' interface. At the top, there is a navigation bar with links: Agviro, OABA, Main Page, Energy Cost Scenarios, Energy Data Entry, Reports and Analysis, and Log Out. The main content area is titled 'Edit Commodities' and contains a list of commodity categories with checkboxes. The categories and their items are:

- Feed
 - Bagged Feed
 - Bulk Feed
 - Feed Pellets
 - Meal Feed
 - Naked/Milled Feed
 - Premix
 - Other
 - Soy Meal
- Grain
 - Rye
 - Wheat
 - Corn
 - Oats
 - Soybean
 - Other
 - Mixed Grain
- Fertilizer
- Other

At the bottom of the list is a 'Save Changes' button. Three callout boxes provide instructions:


- Callout 1:** 'Place a checkmark beside any commodity that you keep monthly production records of. Do not collapse any sections with a checkmark inside.' An arrow points to the 'Meal Feed' checkbox.
- Callout 2:** 'If you do not separate products on production reports then choose other and input total production values under 'other' on the data entry page.' An arrow points to the 'Other' checkbox under the 'Grain' section.
- Callout 3:** 'Save changes when finished inputting products.' An arrow points to the 'Save Changes' button.

Two text boxes on the right side of the page provide additional information:





- Top Text Box:** 'Check each commodity that is used to record monthly production information. Note that each check will represent a value that must be entered each month. Any commodities not yet on this list can be added by the site administrator. Please contact us if there are any problems fitting your production records to the items listed here.'
- Bottom Text Box:** 'Note that you should NOT "uncheck" a product that you have entered production data for. Any product that is not checked will not be considered in production calculations even though the data will remain in the base. The site administrator assist in shifting production to other categories if this becomes necessary.'


SECTION 4.4. ENERGY EXCLUSIONS

Sometimes, a house, shop, or some other building or equipment draws energy from the same source as the mill and yet, is not related to the production of the mill. The purpose of this section is to allow that energy use to be defined and subtracted from the total mill energy use. All information entered here is an annual average of the energy used. Records can be modified, added and deleted. Using this feature, it will not be necessary to attempt to adjust the energy usage information each month when the data is entered. Simply enter the full amount of energy usage provided by the utility company and allow this exclusion section to reduce the overall energy consumption accordingly.



Energy Benchmarking



Agviro
OABA
Main Page
Energy Cost Scenarios
Energy Data Entry
Reports and Analysis
Log Out

Edit Energy Exclusions

Delete?	Description	Energy Type	Annual Usage	Units of Measure	New/Save
<input type="button" value="Delete"/>	House-Gas	Natural Gas ▾	5000	m ³ ▾	<input type="button" value="Save"/>
<input type="button" value="Delete"/>	House	Electricity ▾	20000	kWh ▾	<input type="button" value="Save"/>
		Electricity ▾		n/a ▾	<input type="button" value="Insert record"/>

Add Change or remove exclusions. An example of an exclusion is a Feed Mill site where an old home is located on the property and tied into the same electrical and gas meter as the feed mill. In order to accurately determine the energy usage of the Mill, the energy usage of the home will need to be deducted from the total on the utility bills. Add the information for the house as an exclusion on this page. Any other buildings or equipment that consume energy and are tied into the same utilities as the site should be listed here.

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SECTION 4.5. ENERGY EFFICIENT TECHNOLOGIES (EET)

This screen allows you to indicate which energy-saving technologies have been implemented at your site. This information can be used for filtering to compare sites with similar technologies. There is a summary of how many such technologies each of the various sites has implemented when you run the benchmark comparison report. This feature can be used to compare the relative impact of energy efficient technologies on overall energy consumption. Using this relative impact, site operators can gauge the value of the technologies and assess whether or not to install such technologies at their site.

Energy Benchmarking

Agviro OABA Main Page Energy Cost Scenarios Energy Data Entry Reports and Analysis Log Out

Edit Energy Efficient Technologies

Simply check all the technologies that have been implemented at your particular site

- Flue Gas Economizer
- Flue Gas Vent Control
- Air/Fuel Servo Controls
- Complete Insulation
- Dryer: Heat Recovery
- Electrical: Demand Management
- Electrical: Power Factor Correction
- Electrical: Variable Freq. Drives
- Electrical: EE Motors
- Electrical: Standby Shutdown
- Electrical: EE Lighting & Controls

Save Changes

Check each Energy Efficiency Technology that has been implemented at your site.

Save changes when finished updating

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SECTION 5. ENERGY COST SCENARIOS

Cost scenarios provides you with a tool to experiment with various energy cost options. Note that one thing this tool will **not** do is produce totals that closely match energy bills for the year. It is purely meant as a tool to examine the impact of energy contracts that provide options on the basic energy cost but don't change the delivery or overhead costs. It is possible to enter different values for each month of the year. In order to repeat a value for subsequent months, the row must be cleared before entering the first value for January. Once a value for January is inputted into a previously empty row, all other months will take on the same value. Note: inputting values into any month other than January will not result in a value being copied. Once data has been entered to your satisfaction, you can save it in any one of 4 Data Sets. If information is saved in a dataset, buttons along the top allow you to load those numbers back in for editing or reporting.

Enter energy commodity prices in the following table. [Click here for more information](#)

Load Data Set 1 Load Data Set 2 Load Data Set 3 Load Data Set 4

Costs for Scenario 'A'

Enter Price Data	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Electricity per KWh <input type="button" value="Clear"/>												
Natural Gas per m ³ <input type="button" value="Clear"/>												
Propane per L <input type="button" value="Clear"/>												
Heating Oil per L <input type="button" value="Clear"/>												

Costs for Scenario 'B'

Enter Price Data	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Electricity per KWh <input type="button" value="Clear"/>												
Natural Gas per m ³ <input type="button" value="Clear"/>												
Propane per L <input type="button" value="Clear"/>												
Heating Oil per L <input type="button" value="Clear"/>												

Save Data Set 1 Save Data Set 2 Save Data Set 3 Save Data Set 4

Generate Cost Difference Report

Sample Report Use 12 Months of Data from ...

Last 12 Months 2004 2005 2006 2007 2008

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Load buttons allow previously stored data to be recalled into the data entry forms

Clear buttons allow for all monthly data to be erased for a single row

Inputting a value into January for a blank row copies it into all cells within the row

Input similar data into chart B to be used for the comparison


Use the save buttons to store a data set for later use. Up to 4 cost scenarios can be stored per site

Avoid hitting enter on this page as it will cause a page refresh and data will be lost. Use the tab key or the cursor to to change cells


Use these options to generate a cost difference report based on the current data in the cells

SECTION 5.1. ENERGY COST DIFFERENCE REPORT

The following is a sample of the report. Data from the costs entered on the 'Cost Scenarios' page are combined with energy usage information in the database to produce this cost report. The report illustrates potential changes energy costs, but by no means is it indicative of exact values.



Scenario Comparison Report



October 5, 2006, 4:06 pm
Demo Company 17

Description	Aug/05	Sep/05	Oct/05	Nov/05	Dec/05	Jan/06	Feb/06	Mar/06	Apr/06	May/06	Jun/06	Jul/06	Total
Electrical Usage (KWh)	443094	423510	378653	334048	326467	294247	339333	329436	373755	343509	304534	263635	4154221
Elec. Price A (\$)	0.0595	0.0595	0.0595	0.0595	0.0595	0.0595	0.0595	0.0595	0.0595	0.0595	0.0595	0.0595	0.0595
Total Elec. A (\$)	26364	25199	22530	19876	19425	17508	20190	19601	22238	20439	18120	15686	247176
Elec. Price B (\$)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total Elec. B (\$)	22155							16472	18688	17175	15227	13182	207712
Elec. Difference (\$)	4209							3129					39464

Description	Aug/05	Sep/05	Oct/05	Nov/05	Dec/05	Jan/06	Feb/06	Mar/06	Apr/06	May/06	Jun/06	Jul/06	Total
Natural Gas Usage (m ³)								16241	18				
Nat. Gas Price A (\$)								0.25					
Total Nat. Gas A (\$)								4060					
Nat. Gas Price B (\$)								0.35					
Total Nat. Gas B (\$)								5684	6491	7336	7076	7778	56998
Nat. Gas Difference (\$)								-1624	-1854	-2096	-2022	-2222	-16742

Description	Aug/05	Sep/05	Oct/05	Nov/05	Dec/05	Jan/06	Feb/06	Mar/06	Apr/06	May/06	Jun/06	Jul/06	Total
Propane Usage (L)	0	0	0	0	0	0	0	0	0	0	0	0	0
Propane Price A (\$)	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Total Propane A (\$)	0	0	0	0	0	0	0	0	0	0	0	0	0
Propane Price B (\$)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Total Propane B (\$)	0	0	0	0	0	0	0	0	0	0	0	0	0
Propane Difference (\$)	0	0	0	0	0	0	0	0	0	0	0	0	0

Description	Aug/05	Sep/05	Oct/05	Nov/05	Dec/05	Jan/06	Feb/06	Mar/06	Apr/06	May/06	Jun/06	Jul/06	Total
Heat Oil Usage (L)	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Oil Price A (\$)	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Total Heat Oil A (\$)	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Oil Price B (\$)	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Total Heat Oil B (\$)	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Oil Difference (\$)	0	0	0	0	0	0	0	0	0	0	0	0	0


Grand Total	\$22722
-------------	---------

Monthly cost difference between A and B. Black font indicates a decrease and red indicates an increase.


Yearly cost differences

SECTION 6. ENERGY PRODUCTION DATA ENTRY

This section is used to enter both energy usage and production data. Once you are on the energy data entry page the first thing you must do is select a year to enter data for.



Energy Benchmarking



Agviro
OABA
Main Page
Energy Cost Scenarios
Energy Data Entry
Reports and Analysis
Log Out

Energy Data Entry

Select Year for Data Entry

Click on the year you wish to enter, change, or delete energy and production information for

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Once a year is selected the display will change based on whether or not the year has previously entered information in it or not.



Select Year for Data Entry

2001 2002 2003 2004 2005 2006 2007 2008

Edit?	Month	Enter Electrical Info.					Enter Natural Gas Info.			Enter Propane Info.			Enter Heating Oil Info.		
		Bill Days	Usage kWh	Demand KW	Demand KVA	Power Factor	Bill Days	Usage	Units of Measure	Bill Days	Usage	Units of Measure	Bill Days	Usage	Units of Measure
Edit1	Jan/2007	28	533479	558	870	0.6414	28	16553	m^3			L			L
Edit2	Feb/2007	30	668340	755	1223	0.6173	34	16729	m^3			L			L
Edit3	Mar/2007	29	597687	758	1106	0.6854	32	18043	m^3			L			L
Edit4	Apr/2007	32	634873	567	737	0.7693	28	17852	m^3			L			L
Edit5	May/2007	30	517885	545	594	0.9175	28	18427	m^3			L			L
Edit6	Jun/2007	33	512867	694	923	0.7519	34	18443	m^3			L			L
Edit7	Jul/2007	32	439395	774	882	0.8776	33	18415	m^3			L			L
Edit8	Aug/2007	29	425640	635	1117	0.5685	31	20621	m^3			L			L
Edit9	Sep/2007	32	545447	427	597	0.7152	34	21930	m^3			L			L
Edit10	Oct/2007	32	623307	351	586	0.599	29	20829	m^3			L			L
Edit11	Nov/2007	32	773349	317	510	0.6216	33	22831	m^3			L			L
Edit12	Dec/2007	28	643032	473	581	0.8141	28	23273	m^3			L			L
Total		367	6915301				372	233946		0	0				

Typical screen for year with data previously entered in it. Changes can be made to a record after it has been inputted

If there has been no previous data entered for a year, the display will look something like this.

Commodity Production Data Entry

Edit?	Month	Prod. Days	Wheat		Corn	
			Prod. Qty	Prod. Units	Prod. Qty	Prod. Units
Edit1	Jan/2007	31	1581	Tonne	8591	Tonne
Edit2	Feb/2007	34	1674	Tonne	7606	Tonne
Edit3	Mar/2007	28	1706	Tonne	6835	Tonne
Edit4	Apr/2007	33	1713	Tonne	7937	Tonne
Edit5	May/2007	28	1722	Tonne	8400	Tonne
Edit6	Jun/2007	29	1790	Tonne	7542	Tonne
Edit7	Jul/2007	32	1667	Tonne	8092	Tonne
Edit8	Aug/2007	29	1545	Tonne	8723	Tonne
Edit9	Sep/2007	29	1470	Tonne	9880	Tonne
Edit10	Oct/2007	32	1462	Tonne	8969	Tonne
Edit11	Nov/2007	29	1424	Tonne	8171	Tonne
Edit12	Dec/2007	31	1410	Tonne	8967	Tonne
Total			19164		99713	

Select Year for Data Entry

2001 2002 2003 2004 2005 2006 2007 2008

Edit?	Month	Enter Electrical Info.					Enter Natural Gas Info.			Enter Propane Info.		
		Bill Days	Usage kWh	Demand KW	Demand KVA	Power Factor	Bill Days	Usage	Units of Measure	Bill Days	Usage	Unit Mea
Edit1	Jan/2007											
Edit2	Feb/2007											
Edit3	Mar/2007											
Edit4	Apr/2007											
Edit5	May/2007											
Edit6	Jun/2007											
Edit7	Jul/2007											
Edit8	Aug/2007											
Edit9	Sep/2007											
Edit10	Oct/2007											
Edit11	Nov/2007											
Edit12	Dec/2007											
Total		0	0				0	0		0	0	

Be sure to select products on the main page before entering data!

*** No Commodities Selected for this site ***
Before data can be entered for production, The products produced must be defined by clicking on the Edit button on the Main Site Description Page

SECTION 6.1: ENTERING MONTHLY DATA

Entering monthly data is fairly straightforward. Click the 'edit' button beside the month you wish to change or enter data for. Once the edit button is selected an entry form will appear. Number values must be entered in but units may be selected from the drop down menus.

Edit?	Month	Enter Electrical Info.					Enter Natural Gas Info			Enter Propane Info.			Enter Heating Oil Info.		
		Bill Days	Usage KWh	Demand KW	Demand KVA	Power Factor	Bill Days	Usage	Units of Measure	Bill Days	Usage	Units of Measure	Bill Days	Usage	Units of Measure
	Jan/2007	32	877625	710	837	0.8483	33	3098	m^3			L			L
	Feb/2007	28	878007	304	38				m^3			L			L
	Mar/2007	33	891144	625	10				m^3			L			L
	Apr/2007	34	904186						m^3			L			L
	May/2007	30	902030	99	8				m^3			L			L
	Jun/2007	28	921895	81	126	0.5379	31	2601	m^3			L			L
	Jul/2007	33	889779	48	1074	0.5102	33	2386	m^3			L			L
Save8	Aug/2007	34	955112	484	856	0.5654	31	2197	m^3			L			L
	Sep/2007	32	1031466	452	714	0.6331	30	2722	m^3			L			L
	Oct/2007	30	1031517	384	752							L			L
	Nov/2007	33	1068949	517	770							L			L
	Dec/2007	33	982077	453	561							L			L
	Total	380	11333787									0	0		0

After you have inputted monthly energy data, the next step is to input corresponding production data.

Commodity Production Data Entry

Edit?	Month	Prod. Days	Wheat		Corn	
			Prod. Qty	Prod. Units	Prod. Qty	Prod. Units
	Jan/2007	34	551	Tonne	12029	Tonne
	Feb/2007	32	542	Tonne	12221	Tonne
	Mar/2007	33	580	Tonne	12832	Tonne
	Apr/2007	33	543	Tonne	13669	Tonne
	May/2007	33	587	Tonne	13997	Tonne
	Jun/2007	31	644	Tonne	14677	Tonne
	Jul/2007	31	657	Tonne	13980	Tonne
Save8	Aug/2007	29	689	Tonne	14420	Tonne
	Sep/2007					
	Oct/2007					
	Nov/2007					
	Dec/2007					
	Total					

When entering data, be sure to use the correct units of measure. If you are uncertain of the units of measure, contact your utility company for assistance. Ensure that each energy input has a corresponding production summary. If energy inputs do not have corresponding production data, inaccurate reports will be generated in the reports and analysis section.

SECTION 6.1.1. Note on Demand KW, Demand KVA and Power Factor:

When a site uses electricity it is rare for the voltage and current usage to be perfectly in synch. When they are in synch, the power factor will equal 1 and the KW will equal the KVA. The 3 values KW, KVA and Power factor are related by the equation $\text{Power Factor} = \text{KW} / \text{KVA}$. Since Power factor is always between 0 and 1, KW will always be less than KVA (or equal). Note that some utilities will report the power factor as a percentage (0 to 100). Please record power factor as a value between 0 and 1 on the energy benchmark site.

SECTION 6.2: ENTERING DATA FOR A FULL YEAR

In some cases, it may be desirable to quickly enter data for a full year instead of month-by-month. To accomplish this, you must edit a year that has no monthly entries in it. See Section 6.3 if you want to remove monthly entries from a particular year. If you wish to change data entered in month-by-month format to a full year format you must first clear all rows of monthly data for the total edit functionality to appear.

The screenshot shows a web interface for entering commodity production data. At the top, there is a summary table with columns for months and totals. Below this is a main table titled 'Commodity Production Data Entry' with columns for 'Month', 'Prod. Days', 'Corn' (Prod. Qty, Prod. Units), and 'Wheat' (Prod. Qty, Prod. Units). A callout box with a black border and white background points to the 'Edit0' button in the summary table. The callout text reads: 'When you edit a month with no previous monthly data, the Edit0 functionality appears. Using this function it is possible to enter data as a yearly total rather than monthly sums.'

Month	Prod. Days	Corn Prod. Qty	Corn Prod. Units	Wheat Prod. Qty	Wheat Prod. Units
Nov/2007					
Dec/2007					
Total	0	0		0	0

Month	Prod. Days	Corn Prod. Qty	Corn Prod. Units	Wheat Prod. Qty	Wheat Prod. Units
Jan/2007					
Feb/2007					
Mar/2007					
Apr/2007					
May/2007					
Jun/2007					
Jul/2007					
Aug/2007					
Sep/2007					
Oct/2007					
Nov/2007					
Dec/2007					
Total					

SECTION 6.3: REMOVING DATA

In the rare case where it is desirable to remove data from the database, edit the month for which data should be removed and ensure that all the values read '0' (The units of measure can be ignored). Saving a record with all the data as '0', will delete the record. If it is not desirable to delete the record in full, simple changes can be made using 'edit'.

SECTION 7: REPORTS AND ANALYSIS

The system currently has the ability to generate 3 different reports consisting of data and graphs.

	<p>No Parameters Required. The next screen allow for filtering to ensure comparison against similar sites.</p> <p>Benchmark Report</p>	<p>The first report is the comparison report that compares your site's energy efficiency to other sites in the system. For more information see section 7.1</p>	<p>...s you all the compares to m.</p>
	<p>Select Years to graph. 2 years per page</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2008 <input type="checkbox"/> 2007 <input type="checkbox"/> 2006 <input type="checkbox"/> 2005 <input type="checkbox"/> 2004 <p>Energy and Production Graph</p>	<p>The second report shows energy use and production information. The report generated is in bar graph form and can display up to two years. For more information see section 7.2.</p>	<p>...usage per production for up to 6 years of data for your site.</p>
	<p>Select Years to graph. 1 year per page.</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2008 <input type="checkbox"/> 2007 <input type="checkbox"/> 2006 <input type="checkbox"/> 2005 <input type="checkbox"/> 2004 <p>Electricity Graph</p>	<p>The third report shows electrical usage specifics as well as a graph reporting power factor. For more information see section 7.3.</p>	<p>...age and production information on a stacked bar graph for a given year.</p>
		<p>This report will graph electricity information for the selected year. The first graph will be KWh of total electrical usage and the KWh per production. The second graph will show demand information (KVA, KW and Power Factor)</p>	

SECTION 7.1. REPORT 1: ENERGY BENCHMARK COMPARISON REPORT

When selecting the first report, you must first specify how to filter the comparison. The following screen has a multitude of check boxes that allow for filtering specifications. The first check box is a “Compare Location” check box. If checked, the energy bench mark comparison will only be done against other sites that match the same location as your site. When left blank, sites in all locations will be considered in the comparison.

Check boxes in the other 3 sections (Site Specifics, Commodities and Energy Efficiency Technologies) work in a similar way. Selecting a checkbox adjusts the report to filter for the object selected rather than filter it out. If you have a grain elevator and you select grain elevator, a comparison will be made between your facility and all other facilities with a grain elevator. When a check is placed in any of the boxes, only sites that match your site will be considered in the comparison for that particular check. For example if you process only Wheat and Corn and no other products and then place check marks in Rye, Wheat, Corn and Oats, only sites that process Wheat and Corn but not Rye nor Oats will be considered in the comparison. The check marks tell the system to match sites that are similar to your own and specific comparisons will not be made with sites outside of your area (rye and oats were not included in the comparison because they were outside of the users’ area).

Buttons at the bottom allow you to start with all boxes checked or cleared. Use the + and – buttons to expand and collapse sections of the filter trees.

When you are satisfied with the filter settings, press the “Perform the Benchmark Comparison” button to produce the output data.

The screenshot shows the 'Energy Benchmark Comparison' web interface. At the top, there is a navigation bar with links: Agviro, OABA, Main Page, Energy Cost Scenarios, Energy Data Entry, Reports and Analysis, and Log Out. Below the navigation bar is the title 'Energy Benchmark Comparison'. The main content area contains a text box explaining the filtering process: 'In the following section you will specify how to filter the results of the comparison. Each checkbox that you select will narrow the number of sites that qualify for comparison. Each check also will ensure the sites in the result are more similar to your own. The first... to your own. The first... own will be considered... to match your site. For... selected as a commo... for your own site, then only... use sites that don't process Corn... will be considered for comparison. Use + and - to expand and collapse the tree structures below. Be careful with collapse branches. Checkmarks may be hidden.'

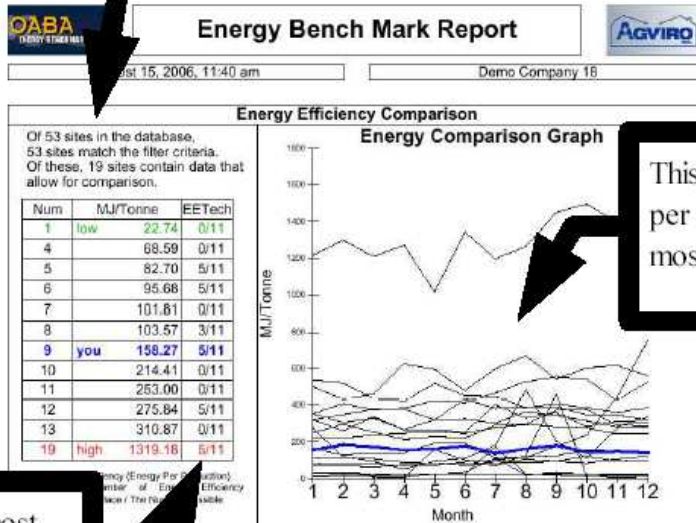
Below the text box are three filter sections:

- Compare Location:** This filter (when checked) will only compare your site to other sites in the same geographic zone. Uncheck this filter to compare your site to others regardless of geographic location.
- Site Specifics Filter:** Grain Elevator, Feed Mill, Warehouse, Fertilizer Plant.
- Commodities Filter:** Feed, Grain, Fertilizer.
- Energy Efficiency Technologies Filter:** Flue Gas Economizer, Flue Gas Vent Control, Air/Fuel Servo Controls, Complete Insulation, Heat Recovery, Electrical: Demand Management, Electrical: Power Factor Correction, Electrical: Variable Freq. Drives, Electrical: EE Motors, Electrical: Standby Shutdown, Electrical: EE Lighting & Controls.

At the bottom, there are three buttons: 'Filter Everything', 'Clear All Filters', and 'Perform the Benchmark Comparison'. A callout box with arrows pointing to the filter sections contains the text: 'Checking boxes will filter sites so that sites more similar to your own will be considered in the comparison'. Another callout box with an arrow pointing to the 'Perform the Benchmark Comparison' button contains the text: 'Press this button to generate the report once you are satisfied with the filter selection'.

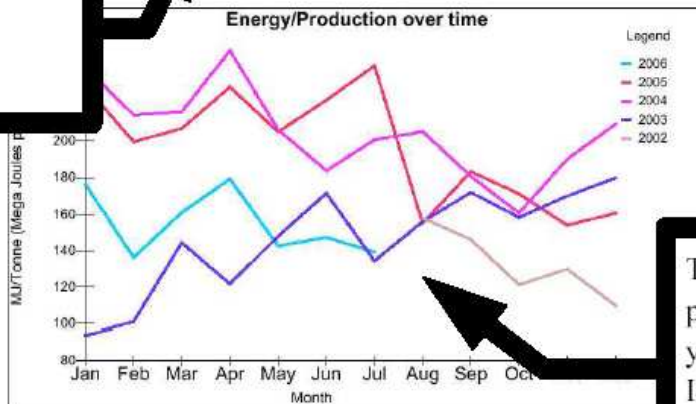
7.1. Continued: Report #1:

A summary of how many sites were eligible for comparison appears here with a chart showing highest, lowest and the sites nearest yours in terms of energy per production.



This graph shows energy per production for the most-recent 12 months data

Chart data is for the most-recent 12 months of complete data.



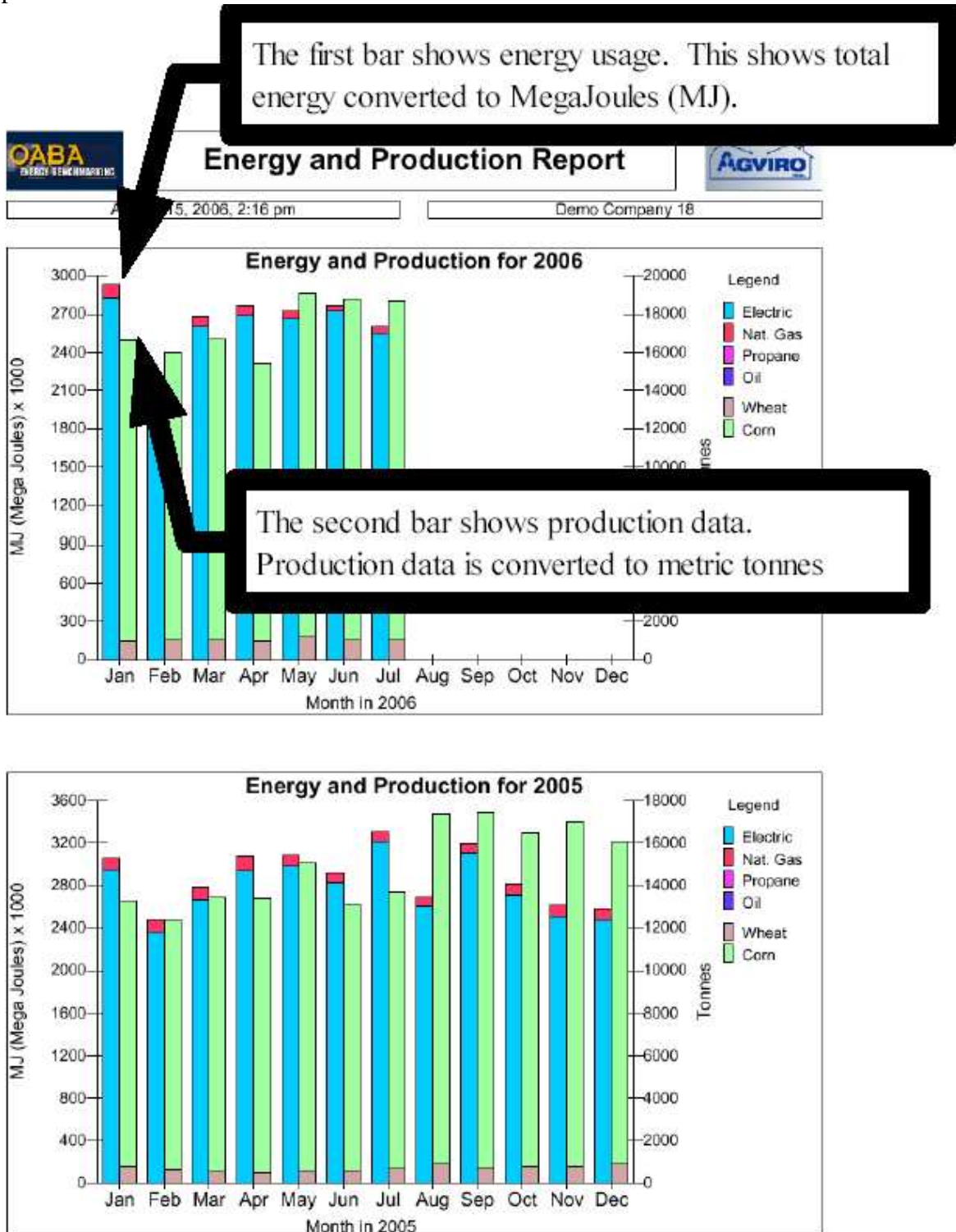
This graph shows energy per production for up to 6 years of data for your site. Ideally, you can see an improvement in energy efficiency from year to year.

The first graph is very helpful in assessing your facility in relation to other facilities similar to yours. Although the benchmark is kept anonymous, discovering your relative efficiency to others in the same field can be a major advantage. Analyzing the energy efficient technologies display can also help gauge relative impacts of implementing such technologies.

The second graph displays information exclusively on your facility. As the graph can display up to 6 years of data, trends in efficiency over time are easily viewed. Such trends are indicative of the efficiency changes of your facility. An increase in energy/production over time indicates a decrease in efficiency, whereas a decrease in energy/production over time indicates an increase in efficiency. A large increase in energy/production over time between years can be used to diagnose potential problems within your facility.

SECTION 7.2. REPORT 2: ENERGY PRODUCTION ON A SINGLE GRAPH

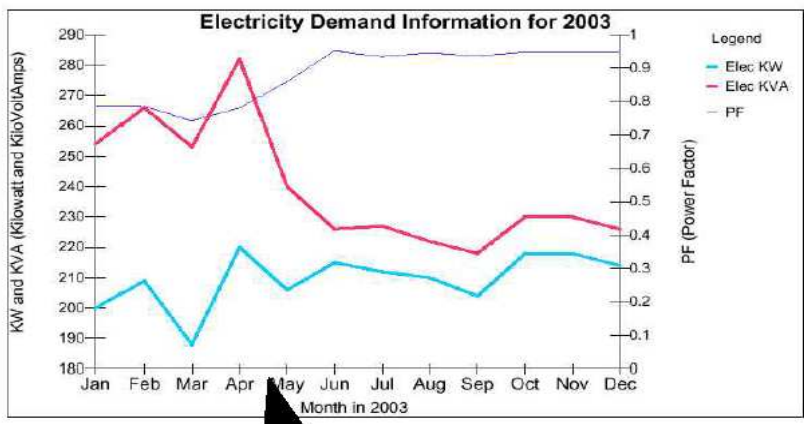
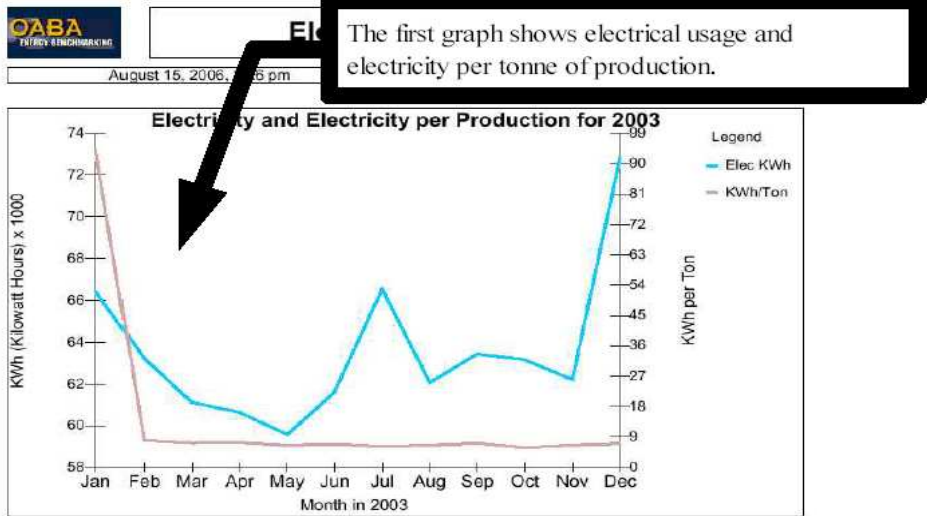
As multiple energy/production plots on a single graph can get very convoluted, it is often useful to graph energy and production data on a single graph. In the second generated report, energy and production data is presented in bar graph form. Furthermore, production and energy are respectively subdivided into individual products and different energy forms. Thus, comparisons can be made between all aspects of energy and production data.



SECTION 7.3. REPORT 3: ELECTRICITY REPORT

The final report generates graphs displaying electrical information. In the first graph, electricity and electricity per production are plotted on the same time axis allowing trends in peak production and energy consumption to be seen. As before, an increase in energy/production is indicative of a decrease in efficiency and vice versa. What is new in this graph is the electrical consumption plot. Now spikes in consumption are depicted and can be compared to energy/production. Peak consumption, peak production, and peak efficiency can all be observed from this graph.

On the second graph, electricity demand information is presented. Here KW, KVA, and the power factor (relationship between the two) are plotted on the same time axis. As the relationship between KW and KVA is proportional to efficiency, trends involving electrical efficiency over time are visible. An increase in power factor indicates an increase in electrical efficiency and vice versa. The larger the power factor, the better the use of energy.



The second graph shows electrical demand (KW, KVA and power factor). Implementation of Electricity Demand Control (An energy efficiency technology) should show a clear and consistent power factor above 0.9 as was done in Jun/03.

Alphabetical Index

Account Information.....	8
Change password.....	8
Data Entry.....	14
Demand.....	15
Demo mode.....	3
Demo Mode.....	2, 5
Electricity report.....	21
Energy and production graph.....	20
Energy Bench Mark Comparison Report.....	18
Energy cost Scenarios.....	13
Energy Efficiency Technologies.....	12
Energy Exclusions.....	11
Filtering.....	9, 18
Full Year.....	16
KVA.....	15
KW.....	15
Logging In.....	4
Main Screen.....	7
Monthly Data.....	15
Power factor.....	15
Production.....	10
Registration.....	6
Registration form.....	6
Remove data.....	16
Reports and Analysis.....	17
Site Specifics.....	9