

ePEP Tutorial

Registration

Users are not required to register for a username and password for the DOE EnMS portal to use ePEP. Users who are not registered on the DOE EnMS portal are still able to create cases in ePEP; however, these cases will not be saved to the online database and must be saved to the user's desktop.

Users who would like to register may do so through the DOE EnMS Portal by following this link:

save-energy-now.org/pages/requestlogin.aspx

Here you will be prompted to enter a display name, contact information, and a password. After entering this information and clicking "submit", an email will be sent to you with a link to activate your account.

Step 1: Case Information

Getting Started

The Case Information screen is the first step in ePEP. On this screen you will enter some basic information about your case.

If you are not signed into the portal, you will not see existing cases and will not be able to save cases to the portal. If you wish to be able to save your cases to the online database, first login to the DOE EnMS portal using the "Sign In" link in the upper corner of the screen. Enter the username and password that you used when registering to the DOE EnMS portal. Once logged in, your display name will appear in the upper right corner of the landing page.



Once logged in, you will see your previously entered existing cases in step 1 which you can modify or delete. If you are a first time user or would like to start a new case you need to select the *Start a New Case* button.

Step 1 - Case Information

1 2 3 4 5 6 7 8

Welcome to ePEP. If you wish to modify an existing case, please select the case below then "modify". If you wish to start a new case please select "Start New Case" below. You can save your case and come back to it later by selecting the "Save and Continue" option at the bottom of each step.

Existing Cases

Case Name
Case 1
Fabricated Metal
Computers
Chemicals

- OR -

If you would like to import a legacy case from the old ePEP, please [click here](#).

Enter a name for your case and enter the company name for the plant or facility. Then enter the basic information about the facility. If you do not see your industry in the drop down list please select Other and enter your industry. Please note that if you select Other, then the energy and cost savings will be calculated using generic nationwide defaults. Click on the tool tip icon next to the industry entry to view definitions for all industries.

Case Name 	<input type="text" value="Case 1"/>
Plant Name	<input type="text" value="Plant 01"/>
State/Region	<input type="text" value="Minnesota"/>
County	<input type="text" value="Dakota County"/>
Industry 	<input type="text" value="Cement"/>
Contact Name	<input type="text" value="John Smith"/>
Contact Email	<input type="text" value="john.smith@abc.com"/>

Click the information icons  on any screen to display the tooltip popup. Tooltips help to better understand what the question is asking.

The *Case Name* should be a descriptive name that you will be able to remember and associate with the particular data center you are assessing. The remaining questions are basic questions regarding the specific plant such as plant name, state/region, county, industry, and name and email address of the plant contact. Only the case name and industry are required.

Step 2: Energy Use Systems

Overview

In Step 2, select the energy end use systems that consume energy at your plant. You must complete this step, as it will be used to determine which scorecards will be shown in Step 3. It also affects the end uses shown in Step 6: Energy Use Distributions and in the report page on Step 8.

In Steps 2 through 7, the status of the case is shown at the top of the screen. If the case is *Online*, your entries will be saved on the portal. If it is *Offline*, your data will not be saved to the portal but can be saved using the *Save to File* button.

Energy Use Systems

Eleven end uses are shown in Step 2. Select the energy end uses that are in use at your plant.

***This step cannot be skipped as it is imperative to the functionality of ePEP.**

Case Name: Case 1	Case Status: <i>Online</i>
Combined heat and power (cogeneration) 	<input type="checkbox"/>
Compressed Air 	<input checked="" type="checkbox"/>
Electrochemical processes 	<input checked="" type="checkbox"/>
Fans and Blowers 	<input checked="" type="checkbox"/>
Industrial Facilities (Lighting, HVAC, and Facility Support) 	<input checked="" type="checkbox"/>
Materials handling 	<input checked="" type="checkbox"/>
Materials processing 	<input checked="" type="checkbox"/>
Process cooling and refrigeration 	<input checked="" type="checkbox"/>
Process heating 	<input checked="" type="checkbox"/>
Pumps 	<input checked="" type="checkbox"/>
Steam Generation Equipment 	<input checked="" type="checkbox"/>

To see a description of each end use, click on the tool tip next to it. When you are finished, click the Save & Continue button to move to Step 3.

Step 3: Energy Use Systems Scorecards

Overview

The scorecards on Step 3 are used to determine your potential energy savings. In addition to a *General Energy Management* scorecard, scorecards will be shown for most of the end use systems selected in Step 2. Scorecards are not available for electrochemical processes, industrial facilities, fans and blowers, materials handling, or materials processing. This step is optional; however, if you do not answer the questions in step 2, the savings potential for each end use will be set as high by default.

Energy Use Systems Scorecards

When you first arrive at step 2, each of the scorecards will be closed by default. To open each scorecard, click on the arrow in the right corner of the blue bar on the top of each scorecard:



This will make the scorecard open so the questions can be viewed.

General Energy Management Questions 

Does your company have a formal written energy management plan?
 Yes No

Have you formed an energy management team at your plant?
 Yes No

Does your company have a formal method of communication in place for employees to suggest energy saving opportunities?
 Yes No

Does your company use life cycle cost analysis to evaluate the economics of energy efficient equipment when making new purchases of large systems?
 Yes No

Does your company establish required payback periods for energy efficient improvement projects?
 Yes No

You are not required to answer all of the questions in Step 3, although it is recommended to answer as many questions as possible to help ePEP more accurately profile your facility. The questions in each scorecard can be reset to the default answers by selecting the *Reset this Scorecard* button.

After completing the scorecard questions, select the *Save & Continue* button at the bottom of the step to save your selections and proceed to the next step.

Step 4: Production Information (Optional)

Overview

The next step in the ePEP application is Production Information (Step 4). This step is optional and does not affect the savings potential calculated by the tool for your plant. In this step, you will be asked to enter production information for your plant. The data collected by this step is used to calculate your energy use per unit of production in Step 8.

Production Information

When you first arrive at Step 4, there will be no data in the production table. To add a production line, select *Add New Production Stream*.

Case Name: Case 1			Case Status: <i>Online</i>			
Production Line Name	Product Name	Average Quantity	Units	Period	Percent Consumption	
No data to display						
Add New Production Stream						
<input type="button" value="Previous"/>		<input type="button" value="Save to File"/>		<input type="button" value="Save & Continue"/>		

When you select *Add New Production Stream*, data entry fields will appear. Enter your production line name, average quantity, period, product name, units, and percent consumption. For the percent consumption field, enter the approximate percent of your total energy consumption that is used to make this product. When you have entered data into all of the fields, select *Update* to add the production line to the case.

Production Line Name	Product Name	Average Quantity	Units	Period	Percent Consumption
Production Line Name	<input type="text" value="Product 1"/>	Product Name	<input type="text" value="Chips"/>	Average Quantity	<input type="text" value="1000"/>
Average Quantity	<input type="text" value="1000"/>	Units	<input type="text" value="Bags"/>	Period	<input type="text" value="Quarterly"/>
Period	<input type="text" value="Quarterly"/>	Percent Consumption	<input type="text" value="30"/>	<input type="button" value="Update"/> <input type="button" value="Cancel"/>	

After selecting *Update*, the production stream will be added to the table. Repeat this process for each production line in your plant.

Case Name: Case 1			Case Status: <i>Online</i>			
	Production Line Name	Product Name	Average Quantity	Units	Period	Percent Consumption
Edit Delete	Product 1	Chips	1000	Bags	Quarterly	30
Edit Delete	Product 2	Cookies	2010	lbs	Quarterly	60
Add New Production Stream						
<input type="button" value="Previous"/>		<input type="button" value="Save to File"/>		<input type="button" value="Save & Continue"/>		

Once you have finished entering the production streams for your plant, select *Save & Continue* to save your data and proceed to the next step.

Step 5: Supplied Energy

Overview

The next step in the ePEP application is Supplied Energy (Step 5). You are asked to enter data from utility bills and/or submeter recordings. Entering this data is optional but doing so will help ePEP more accurately profile your facility. If you do not, ePEP will only calculate a percent savings in Step 8, and not MMBtu of savings.

Supplied Energy

When you first arrive at Step 5, no data will be displayed. Like the production step, add an energy stream by selecting *Add New Energy Stream* at the bottom of the table.

Case Name: Case 1				Case Status: Online				
Meter ID	Energy Type	Use Per Period	Units	Period	Cost Per Period	Unit Cost	Source Energy Factor	
No data to display								
Add New Energy Stream								
<input type="button" value="Previous"/>			<input type="button" value="Save to File"/>			<input type="button" value="Save & Continue"/>		

In this step, enter all of the supplied energy streams for your plant. A stream can be thought of as a unique supply of energy. If you do not have data on a meter simply leave it blank. A plant may consume energy from more than one stream. For example, a plant may purchase electricity from two different sources, generate electricity on site, and utilize chilled water. This would be three unique streams of electricity and one unique stream of chilled water. For each account you will enter the following information:

- **Meter ID:** the name that you give this account. It should be something familiar so that you can remember which account is which.
- **Energy Type:** choose electricity, fuel, or steam. If the energy type is fuel, select the fuel type for the given meter.
- **Use per Period:** the amount of energy used in a given period, entering different period intervals for different energy streams is acceptable, as ePEP will calculate the annual data, but do not enter more than 1 year of data.
- **Units:** the unit which is most familiar to you. ePEP allows you to manipulate your data in your common unit, only when presenting results does ePEP convert all units to MMBtus.
- **Period:** the period of time that you are entering information for. You can enter a monthly average, a quarterly average or an annual average.
- **Cost per Period:** the average cost of energy purchased during the selected period. For energy that is generated on site the cost should be zero.
- **Source Energy Factor:** the value here is used to calculate the source energy for each energy stream. Source Energy incorporates all transmission, delivery, and production losses associated with each energy stream. It is calculated by multiplying the site energy by the source energy factor. ePEP provides default source energy factors for each energy stream, based on those used in the Energy Star Portfolio Manager. Users may use their own source factors for each energy stream or meter e.g. to account for electricity produced from cogeneration, renewable sources, etc.
- **Heating Value:** if you enter fuel as an energy type, a heating value entry field will appear. The heating value is the amount of heat produced by combustion of a unit quantity of fuel. If you do

not know the heating value for the fuel stream, ePEP will provide default values for the fuel selected.

- **Temperature and Pressure:** if you enter a steam energy stream, a temperature and pressure box will appear. These fields are required in order for ePEP to calculate the energy of the steam stream.

Meter ID	Energy Type	Use Per Period	Units	Period	Cost Per Period	Unit Cost	Source Energy Factor
Meter ID	Electric 1				Cost Per Period	80000	\$
Energy Type	Electricity				Source Energy Factor	3.182	
Use Per Period		1000	MWh				
Period		Annual					
							Update Cancel

[Add New Energy Stream](#)

[Previous](#) [Save to File](#) [Save & Continue](#)

Click the *Update* link after entering meter data. Your individual meter data is now saved, you can repeat this process and add data for as many meters as you would like. If after clicking *Update* you need to modify or delete meter data simply click on the *Edit* or *Delete* link on the left of the meter you wish to edit.

	Meter ID	Energy Type	Use Per Period	Units	Period	Cost Per Period	Unit Cost	Source Energy Factor	
Edit Delete	Electric 1	Electricity	1,000.00	MWh	Annual	80,000.00	\$80.00	3.18	
Edit Delete	Nat Gas 1	Fuel	1,000.00	MMBtu	Annual	10,000.00	\$10.00	1.01	Fuel Type Natural gas Heating Value 1,032.00 Btu/SCF
Edit Delete	Steam 1	Steam	1,100.00	MMBtu	Annual	10,000.00	\$9.09	1.45	Temperature 340.00 deg F Pressure 80.00 Psia

After all the supplied energy streams have been entered, click *Save & Continue* at the bottom of the page.

Step 6: Energy Use Distribution

Overview

The energy use distribution screens provide energy usage information for ePEP. The purpose of this step is for you to provide ePEP with some idea of how much energy each of the major breakout categories uses on an annual basis. The way that you do this is by supplying the percentage (or value) of total energy that each breakout category uses. If you are not sure how much energy is used for each of the breakout categories, you can skip this step as ePEP provides default percentages for you. The default percentages are based on data collected by the [Manufacturing Energy Consumption Survey](#) (MECS) administered by the [U.S. Energy Information Administration](#) in 2010. However, for more accurate results you should estimate your actual percentages and enter them in the boxes below, even if this is partial information.

Energy Use Distribution

When you arrive at Step 6, you will see the energy streams added in Step 5. To view the detailed breakout for each energy stream, click on the plus sign to the left of the Meter ID.

Meter ID	Total Annual Site Energy Use	Unit
⊕ Electric 1	1,000.0	MWh
⊕ Nat Gas 1	1,000.0	MMBtu
⊕ Steam 1	1,100.0	MMBtu

The plus sign next to the Meter ID expands the breakout for the selected meter. Here you will see the default breakout for the meter that is based on the industry selected in Step 1.

Meter ID	Total Annual Site Energy Use	Unit																																										
⊖ Electric 1	1,000.0	MWh																																										
<table border="1"> <thead> <tr> <th colspan="3">Meter ID</th> </tr> <tr> <th></th> <th>Usage (Source)</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>Compressed Air</td> <td>113.32</td> <td>11.3 %</td> </tr> <tr> <td>Electrochemical Processes</td> <td>0.00</td> <td>0.0 %</td> </tr> <tr> <td>Fans and Blowers</td> <td>113.32</td> <td>11.3 %</td> </tr> <tr> <td>Industrial Facilities (Lighting, HVAC, and Facility Support)</td> <td>133.32</td> <td>13.3 %</td> </tr> <tr> <td>Materials Handling</td> <td>362.63</td> <td>36.3 %</td> </tr> <tr> <td>Materials Processing</td> <td>98.21</td> <td>9.8 %</td> </tr> <tr> <td>Process Cooling</td> <td>0.00</td> <td>0.0 %</td> </tr> <tr> <td>Process Heating</td> <td>88.88</td> <td>8.9 %</td> </tr> <tr> <td>Pumps</td> <td>60.44</td> <td>6.0 %</td> </tr> <tr> <td>Steam Generation Equipment</td> <td>0.00</td> <td>0.0 %</td> </tr> <tr> <td>Other</td> <td>29.77</td> <td>3.0 %</td> </tr> <tr> <td>Total Annual Site Energy Use</td> <td>1,000.00</td> <td>100.0 %</td> </tr> </tbody> </table>			Meter ID				Usage (Source)	%	Compressed Air	113.32	11.3 %	Electrochemical Processes	0.00	0.0 %	Fans and Blowers	113.32	11.3 %	Industrial Facilities (Lighting, HVAC, and Facility Support)	133.32	13.3 %	Materials Handling	362.63	36.3 %	Materials Processing	98.21	9.8 %	Process Cooling	0.00	0.0 %	Process Heating	88.88	8.9 %	Pumps	60.44	6.0 %	Steam Generation Equipment	0.00	0.0 %	Other	29.77	3.0 %	Total Annual Site Energy Use	1,000.00	100.0 %
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To change the breakout, select the *Edit* link in the bottom right corner of the table. The table will be converted into editable entry fields.

Meter ID	Total Annual Site Energy Use	Unit
⊖ Electric 1	1,000.0	MWh
Meter ID		
	Usage (Source)	%
Compressed Air	113.32	11.3
Electrochemical Processes	0.00	0.0
Fans and Blowers	113.32	11.3
Industrial Facilities (Lighting, HVAC, and Facility Support)	133.32	13.3
Materials Handling	362.63	36.3
Materials Processing	98.21	9.8
Process Cooling	0.00	0.0
Process Heating	88.88	8.9
Pumps	60.44	6.0
Steam Generation Equipment	0.00	0.0
Other	29.88	3.0 %
Total Annual Site Energy Use	1,000.00	100.0 %
Save Cancel Restore Default Distributions		
⊕ Nat Gas 1	1,000.0	MMBtu
⊕ Steam 1	1,100.0	MMBtu

Enter a value for each meter. If the meter does not use any energy from a given category, enter zero. Only the usage or percentage values in this section can be edited, not both. After you enter the usage for an end use, ePEP will calculate the corresponding percentage. If you enter a percentage, ePEP will calculate the corresponding usage. This calculation may take a second, requiring you to pause before moving to the next end use.

The percentages in the % column for a given meter MUST equal 100%. If they do not equal 100% and there is a negative percent for *Other*, ePEP will not let you move onto the next page.

The total annual energy uses for each meter are the values calculated in step 5. If you notice a problem with a meter or need to modify one, go back to step 5 by clicking the step 5 box on the top of this page.



If after editing the breakouts if you wish to restore the usage and percentages to the default breakout based on the MECS data, select *Restore Default Distributions*.

Step 7: Energy Savings Opportunities

Overview

Step 7 of ePEP, *Energy Savings Opportunities*, allows you to characterize the potential energy savings opportunities for the various major systems in your plant that ePEP does not have scorecards for. ePEP does not have scorecards for electrochemical processes, industrial facilities, fans and blowers, materials handling, and materials processing. If these end uses are selected in step 2, *Energy Use Systems*, they will appear on step 7.

Energy Use Distribution

In Step 7, you will be prompted to categorize the savings opportunity for the end uses selected in step 2 that ePEP does not have scorecards for. The criteria for a high, medium, and low ranking is:

High: No assessment completed / Don't know

Medium: System assessment completed but little or no implementation completed

Low: System assessment completed and substantial implementation completed

These criteria are also posted on the step. The default energy savings opportunity level is high. To change the level, select the arrow next to the high, medium, or low ranking. When you have finished updating this step, select the *Save & Continue* button.

High (Default) = No system assessment completed / Don't know

Medium = System assessment completed but little or no implementation completed

Low = System assessment completed and substantial implementation completed

Case Name: Case 1		Case Status: <i>Online</i>	
Energy Use System	Energy Saving Opportunity Level		
Electrochemical processes	High		▼
Industrial Facilities (Lighting, HVAC and Facility Support)	High		▼
Fans and Blowers	High		▼
Materials handling	High		▼
Materials processing	High		▼

Step 8: Results

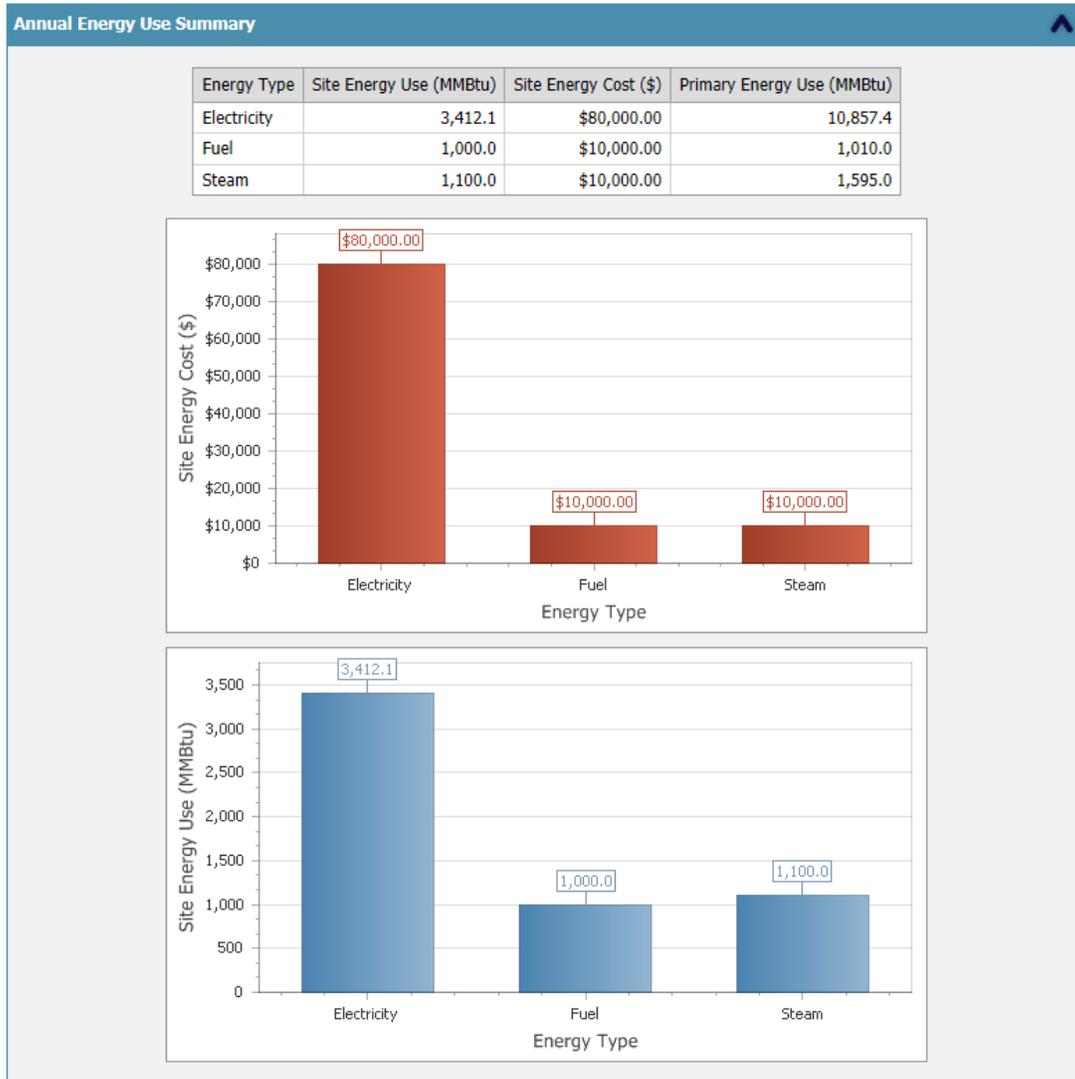
Overview

The eighth and final step in ePEP is the results screen. The ePEP results report has tables and graphs that show how much energy you are purchasing (and how much it costs), how you are consuming that energy, and potentially how much energy and money you could save. The results report also has a customized table of suggested next steps to quickly get you started saving money and energy.

On the report page, you will find a link at the top of the results report to view a printable version of the report in html format. The printable report contains all data you submitted throughout the ePEP process including the reports section.



Under the case information is the *Annual Energy Use Summary*. The energy in this section is converted to MMBtu for comparison.

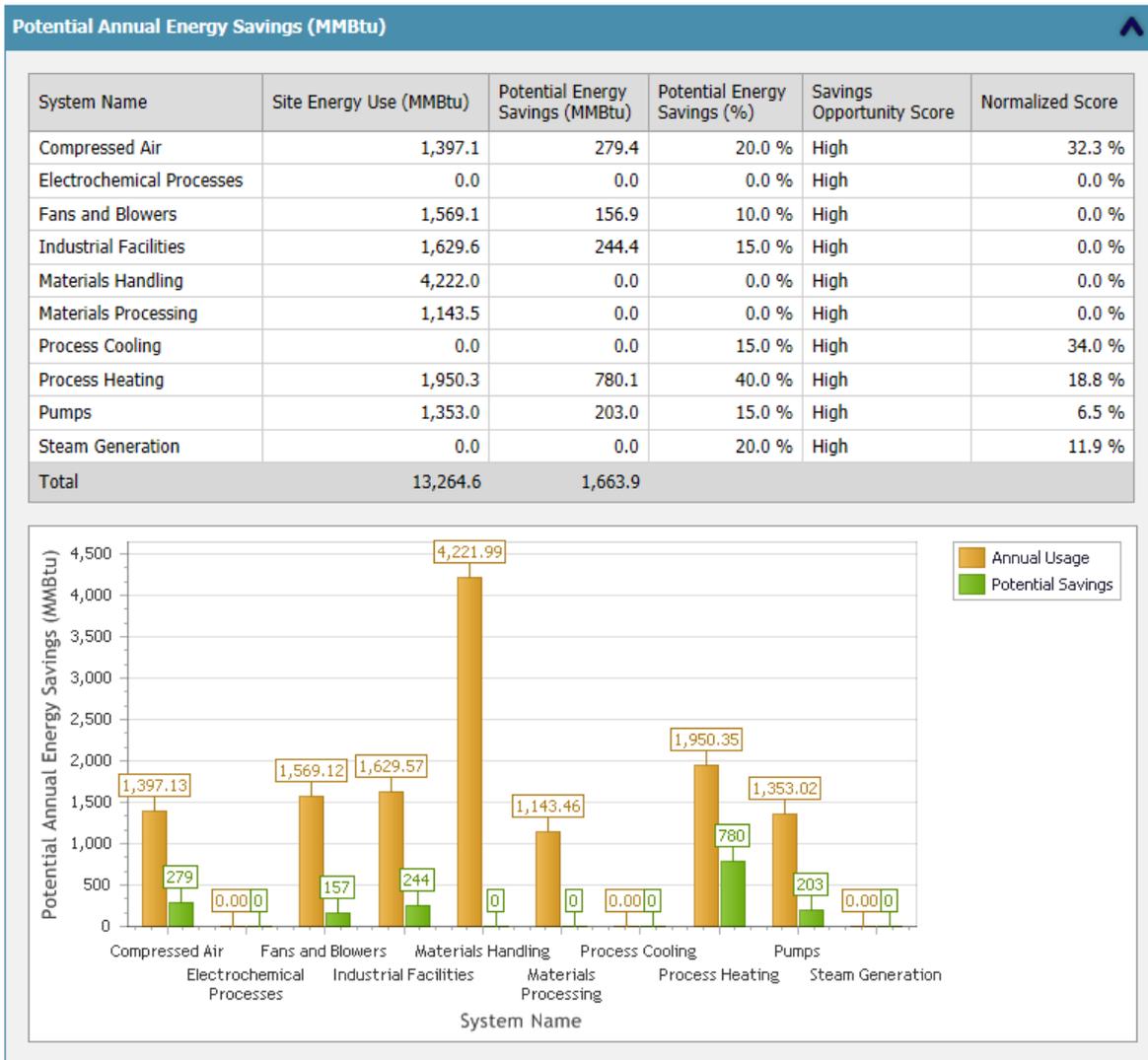


The third section of the report contains your *Production Energy Usage*. This section summarizes energy use per unit of production.

Production Energy Usage

Production Stream	Quantity	Energy Use (MMBtu)	Energy Use per Unit of Production (MMBtu/unit)	Percent Consumption
Product 1 (Bags)	1000	1,653.6	1.7	30
Product 2 (lbs)	2010	3,307.3	1.6	60

Below the production energy usage is the *Potential Annual Energy Savings (MMBtu)* summary.



This section lists the current site energy use (MMBtu), potential energy savings in MMBtu and as a percent, savings opportunity score, and normalized score. The answers from step 3, *Energy Use Scorecards*, determine the normalized score in the sixth column. Based on this score, each end use is assigned a savings opportunity of high, medium, or low. The savings opportunity corresponds to a percent of potential savings.

The final section of the ePEP report shows your customized table of "Suggested Next Steps" based on the energy saving identified previously in the report. The suggested next steps are broken out by end use category. These are determined by your savings opportunity score.

Suggested Next Steps



	Description
☐	<p>Category: Combined heat and power (cogeneration)</p> <p>Maximize use of HRSG to meet the plant steam requirements, minimize load on boilers outside the co-gen system</p> <p>Consider use of heat from diesel generator engine (cooling water and exhaust gases) for steam generation or in heating processes.</p> <p>Consider use of heat from gas turbine exhaust gases for steam generation or in heating processes</p>
☐	<p>Category: Compressed air</p> <p>Eliminate inappropriate uses of compressed air</p> <p>Implement air leak management program</p> <p>Use the DOE AirMaster+ software tool & other resources to identify and quantify energy saving opportunities</p> <p>Perform a detailed Compressed Air System Assessment at your site</p>
☐	<p>Category: Process cooling and refrigeration</p> <p>Evaluate use of variable speed drives on chilled water pumps, cooling tower fans, etc.</p> <p>Ensure proper refrigerant charge and eliminate non-condensable from the system</p> <p>Implement chilled water temperature and condenser water temperature reset</p> <p>Use the DOE CWSAT software tool & other resources to identify and quantify energy saving opportunities</p> <p>Perform a detailed Refrigeration / Process Cooling System Assessment at your site</p>
☐	<p>Category: Process heating</p> <p>Keep heat transfer surfaces clean by eliminating build up of soot, scale or other material.</p> <p>Reduce or eliminate openings in the furnace to reduce radiation heat losses. Repair cracks and damaged insulation in furnace walls, doors etc. Keep the door opening to minimum during operations.</p> <p>Measure oxygen (O₂) and Carbon Monoxide CO or combustibles in flue gases and take actions to reduce O₂ in flue gases while maintaining near zero value for CO or combustibles. In certain cases safety requirements may require to have high values of O₂ in flue gases. Consult your equipment supplier before making any changes.</p> <p>Conduct a detail energy assessment for your heating equipment using tools such as Process Heating Survey and Assessment Tool (PHAST) to identify energy saving opportunities.</p>