EnPI V4.0 User Manual

This document provides guidance on how to use the EnPI V4.0 tool after the tool has been installed. For instructions on how to install the EnPI V4.0 tool, please see the *EnPI Installation and Un-Install Instructions* on the EnPI V4.0 eCenter landing page (https://ecenter.ee.doe.gov/EM/tools/Pages/EnPI.aspx).

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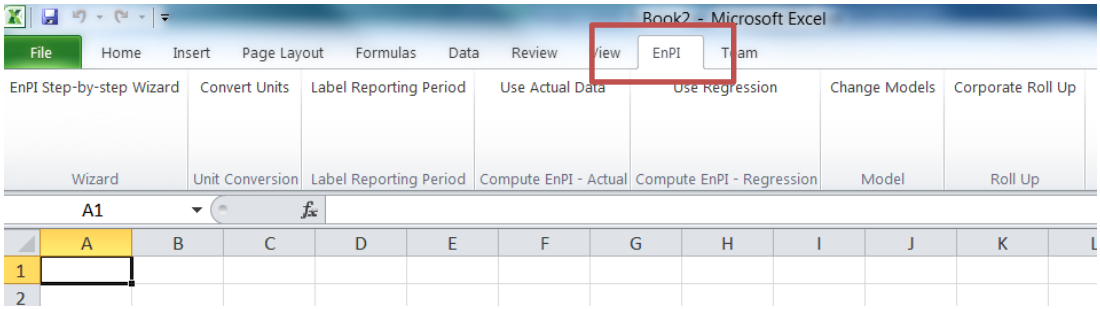
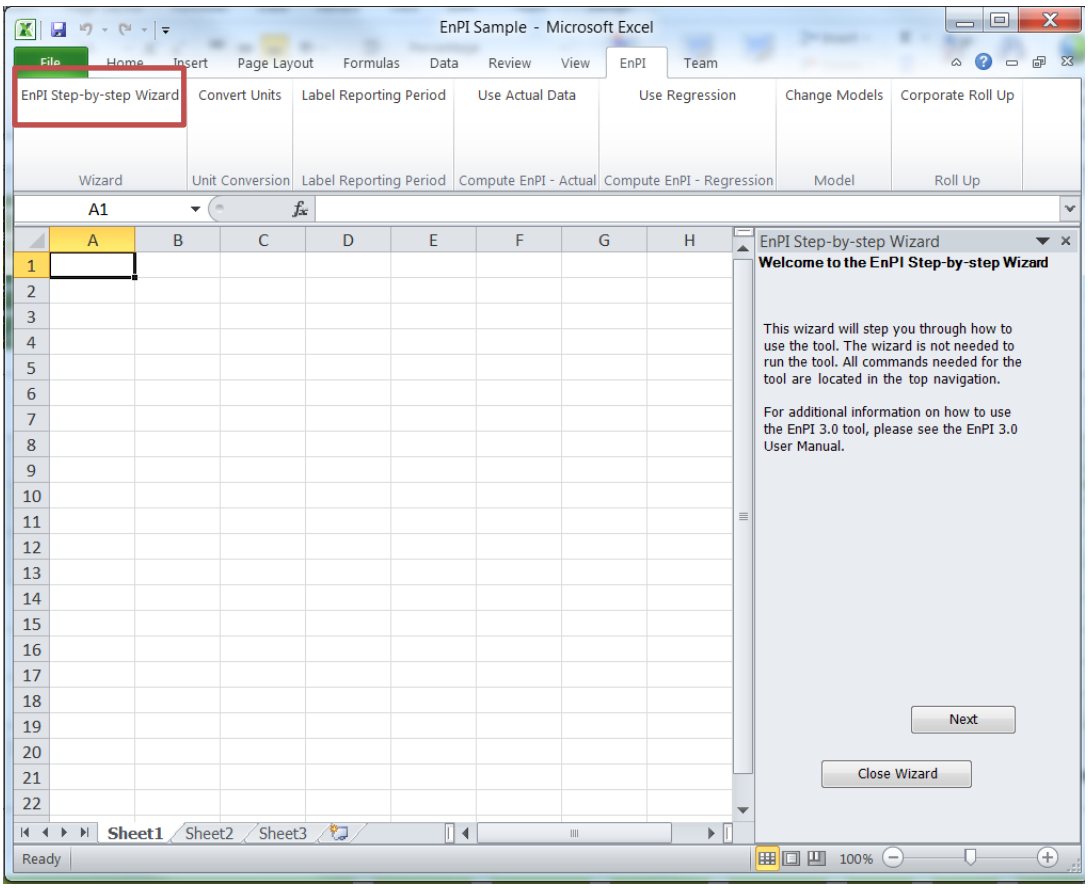
Getting Started

The latest version of the EnPI Tool has been developed as an Excel Add-In. To use the tool, open an existing or new Excel workbook. Once installed, an "EnPI" tab will appear at the top of any Excel workbook.

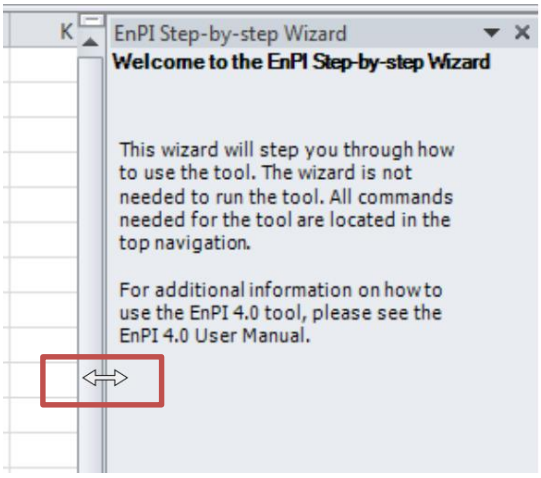


EnPI Wizard

First time users are recommended to use the EnPI Step-by-Step Wizard. To use the Wizard, select "EnPI Step-by-Step Wizard" in the top navigation. The "wizard" will appear on the right side of the workbook.



The EnPI Wizard provides instructions on how to use the tool. To resize the wizard window, move your cursor over the border until a two sided arrow appears. When the arrrow appears, click and drag the window to the desired width.



Step 1: Enter Energy Data and Independent Variables

Three inputs are required to run the EnPI tool:

1. **Energy data:** Energy data either as a total or separated by type is required. The data can be initially entered in any unit. It is recommended to enter energy consumption for each type separately (i.e. electricity, natural gas, coal, etc. should be entered in separate columns).
2. **Independent variables and/or production data:** An independent variable is any factor that affects the energy consumption in a facility. Examples of independent variables include cooling degree days, heating degree days, and production. If the user chooses ***not*** to perform regression analysis on the data (i.e. use actual data for the calculations) only a production variable is required. However, production data is not required (but is recommended) if the user chooses to use regression analysis to normalize the data.
3. **Reporting periods:** Reporting periods or reporting years need to be assigned to each data point. For example, if a company's annual report follows a fiscal year from April to March, all data points between April 2009 and March 2010 need to be labeled as "fiscal year 2009", "FY2009", "2009", or another label. The label for the reporting periods must go in a column labeled "Period" and must be listed in chronological order. Any format (e.g. lower case letters, upper case letters, numbers, etc.) can be used for the reporting periods or "Period" column; however, all data points within the same reporting period must have the same label.

EnPI V4.0 has been updated to calculate cost savings. If you wish to calculate cost savings, a fourth input is required:

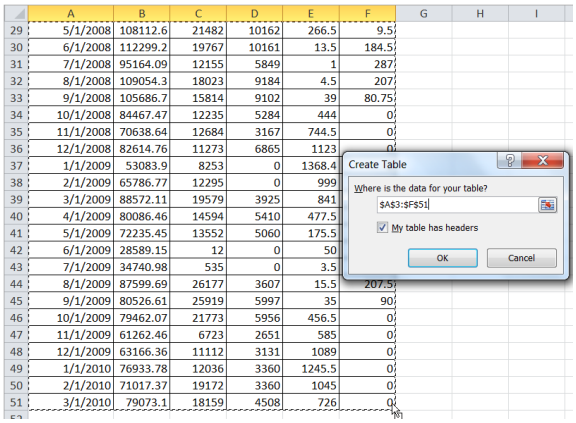
4. **Utility Cost Data:** Energy cost data corresponding to the timeline in which energy data was entered must be included in the inputs in order to calculated cost savings. This is the total amount billed for a given energy source (e.g. electric, natural gas, etc.). For example, if the electricity data is entered in monthly increments corresponding to the calendar year, the electric cost data entered should follow the same increments and align with the monthly energy consumption data entered.

The inputs should be entered as adjacent columns in the same sheet of the Excel workbook. If you are using the tool with an existing workbook and your data is already in the sheet, select "My Data is in the Sheet" on the second step of the wizard.

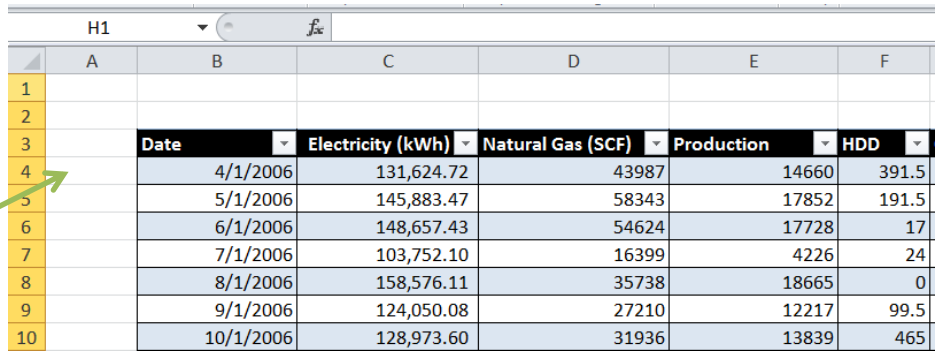
Starting from an existing workbook

After selecting "My Data is in the Sheet", the user will be prompted to format the data in an Excel table. After selecting "Format data as an excel table" in the wizard, highlight all rows and columns of your data in the sheet and select "ok". If your table has headers in the first row, check "my table has headers" before selecting "ok".

Please Note: The tool will not run if special characters (-, !, @, #, $) are located in the column headers. Please remove special characters from the headers before running the tool.



The first line of the table must contain the column headers. The second line must contain the first data point of the series.

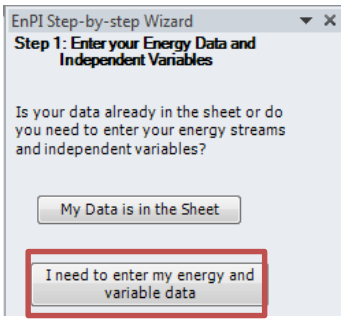


Date	Electricity (kWh)	Natural Gas (SCF)	Production	HDD
4/1/2006	131,624.72	43987	14660	391.5
5/1/2006	145,883.47	58343	17852	191.5
6/1/2006	148,657.43	54624	17728	17
7/1/2006	103,752.10	16399	4226	24
8/1/2006	158,576.11	35738	18665	0
9/1/2006	124,050.08	27210	12217	99.5
10/1/2006	128,973.60	31936	13839	465

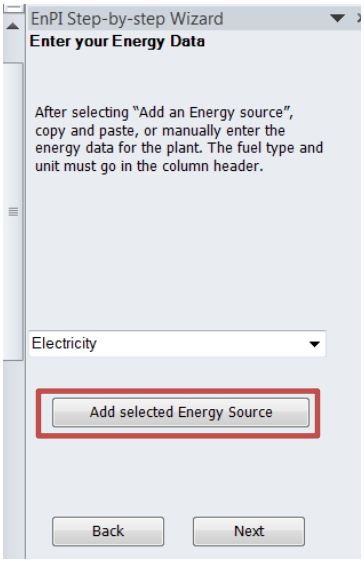
A date column is only required to run the tool if the "Label Reporting Period" feature is used. See step 2 starting on page 6 for more information about the "Label Reporting Period" feature. If the "Period" column is manually added, a column containing the date is not required. If a date column is added, it will appear on the resulting "model data" or "detailed data" sheets.

Starting from a new or blank workbook

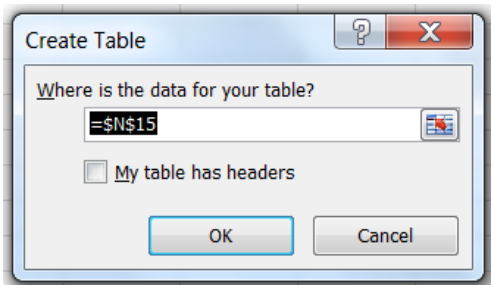
If you start in an empty or blank sheet, select "I need to enter my energy and variable data" on the second step of the wizard.



The following step will prompt you to add columns for your energy data. To add an energy source, select the source from the drop down menu and select “add selected energy source”.



After selecting “add selected energy source”, the tool will ask “where is the data for your table”. When this pop up appears select the cell you would like the column header to appear in and select “ok”.



A column labeled “Date” and the energy source selected will appear. The first column can either be deleted or the date/month corresponding to the data point can be manually entered in the first column. Either manually enter or paste the energy consumption data into the second column created.

	A	B
1	Date	Electrici
2	4/1/2009	5,555
3	5/1/2009	5,555
4	6/1/2009	6,332

Continue adding energy sources until all the energy consumption data for the facility is present in the sheet. Once all the energy consumption data is present in the sheet, select “next”.

On the next step labeled “Enter Independent Variables”, use the drop down to select the independent variables you would like to add to the sheet and enter the corresponding data. If “other” is selected as a column, change the column header to match the data entered. **Please Note: The tool will not run if special characters (-, !, @, #, $) are located in the column headers. Please remove special characters from the headers before running the tool.**

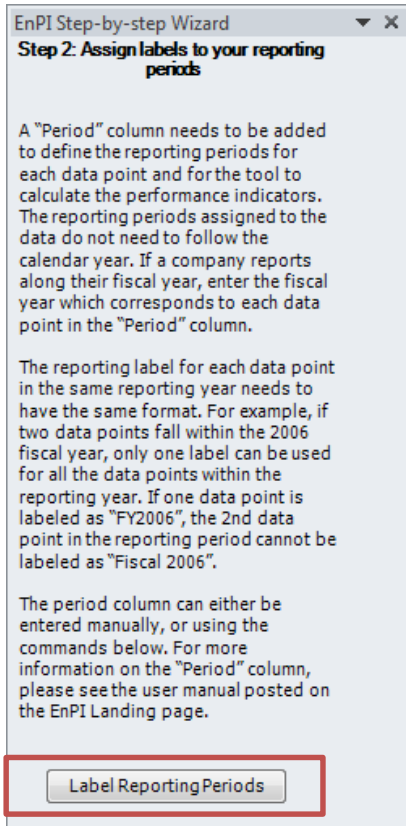
D	E	F	G
Production	HDD	CDD	Employee Hours
14660	391.5	2	
17852	191.5	72.5	
17728	17	157	
4226	24	344	

After all the independent variables have been entered in the sheet, select “next” in the wizard.

Step 2: Assign labels to your reporting periods

After the energy and independent variable data has been entered into the sheet, a “Period” column needs to be added to define the reporting periods for each data point. Reporting period labels are required for the tool to calculate the performance indicators. The reporting periods assigned to the data do not need to follow the calendar year; however, they do need to be listed in chronological order. For example, fiscal year 3 should be listed after fiscal year 2 and data for June 2010 should come after data for May 2010.

If a company reports along their fiscal year, enter the fiscal year which corresponds to each data point in the “Period” column. If the table does not have a “Period” column, select “Label Reporting Periods” in the Wizard.



The reporting label for each data point in the same reporting year needs to have the same format. For example, if two data points fall within the 2006 fiscal year, only one label can be used for all the data points within the reporting year. If one data point is labeled as "FY2006", the second data point in the reporting period cannot be labeled as "Fiscal Year 2006".

Irregular Report Years

When creating the "Period" column, the tool assumes the user's reporting year follows a 12 month period. For example, if "weekly" is selected as the interval, 52 data points will be labeled with the period label selected. However, the tool can be run with irregular report years (e.g. 15 months spanning July 2012 to September 2013). If the baseline year or reporting periods do not follow a 12 month period, the period labels will need to be manually entered (e.g. "Report Year 1" would need to be written in for the 15 month period).

Please note, if an irregular report year is entered, the annual savings calculation on the EnPI and SEnPI results sheets will be mathematically incorrect, since the calculation assumes the same number of days are included in the baseline, model, and reporting periods. If the baseline, model, and reporting periods do not contain the same number of days, the annual savings calculation will be incorrect. For more information, please see the EnPI V4.0 Algorithm Document.

Examples of labels that can be used in the "Period" column are shown below. Note that the data is listed in chronological order. Data must be listed from earliest to latest in the rows.

Date	Period
4/1/2009	FY2006
5/1/2009	FY2006
6/1/2009	FY2006
7/1/2009	FY2006
8/1/2009	FY2006
9/1/2009	FY2006
10/1/2009	FY2006
11/1/2009	FY2006
12/1/2009	FY2006
1/1/2010	FY2006
2/1/2010	FY2006
3/1/2010	FY2006
4/1/2010	FY2007
5/1/2010	FY2007
6/1/2010	FY2007
7/1/2010	FY2007
8/1/2010	FY2007
9/1/2010	FY2007
10/1/2010	FY2007
11/1/2010	FY2007
12/1/2010	FY2007
1/1/2011	FY2007
2/1/2011	FY2007
3/1/2011	FY2007
4/1/2011	FY2008
5/1/2011	FY2008
6/1/2011	FY2008

Date	Period
1/1/2010	2010
2/1/2010	2010
3/1/2010	2010
4/1/2010	2010
5/1/2010	2010
6/1/2010	2010
7/1/2010	2010
8/1/2010	2010
9/1/2010	2010
10/1/2010	2010
11/1/2010	2010
12/1/2010	2010
1/1/2011	2011
2/1/2011	2011
3/1/2011	2011
4/1/2011	2011
5/1/2011	2011
6/1/2011	2011
7/1/2011	2011
8/1/2011	2011
9/1/2011	2011
10/1/2011	2011
11/1/2011	2011
12/1/2011	2011
1/1/2012	2012
2/1/2012	2012
3/1/2012	2012
4/1/2012	2012

Date	Period
4/1/2009	Fiscal Year 2006
5/1/2009	Fiscal Year 2006
6/1/2009	Fiscal Year 2006
7/1/2009	Fiscal Year 2006
8/1/2009	Fiscal Year 2006
9/1/2009	Fiscal Year 2006
10/1/2009	Fiscal Year 2006
11/1/2009	Fiscal Year 2006
12/1/2009	Fiscal Year 2006
1/1/2010	Fiscal Year 2006
2/1/2010	Fiscal Year 2006
3/1/2010	Fiscal Year 2006
4/1/2010	Fiscal Year 2007
5/1/2010	Fiscal Year 2007
6/1/2010	Fiscal Year 2007
7/1/2010	Fiscal Year 2007
8/1/2010	Fiscal Year 2007
9/1/2010	Fiscal Year 2007
10/1/2010	Fiscal Year 2007
11/1/2010	Fiscal Year 2007
12/1/2010	Fiscal Year 2007
1/1/2011	Fiscal Year 2007
2/1/2011	Fiscal Year 2007
3/1/2011	Fiscal Year 2007
4/1/2011	Fiscal Year 2008
5/1/2011	Fiscal Year 2008
6/1/2011	Fiscal Year 2008

Date	Period
4/1/2009	FY2006
4/7/2009	FY2006
4/13/2009	FY2006
4/19/2009	FY2006
4/25/2009	FY2006
5/1/2009	FY2006
5/7/2009	FY2006
5/13/2009	FY2006
5/19/2009	FY2006
5/25/2009	FY2006
5/31/2009	FY2006
6/6/2009	FY2006
6/12/2009	FY2006
6/18/2009	FY2006
6/24/2009	FY2006
6/30/2009	FY2006
7/6/2009	FY2006
7/12/2009	FY2006
7/18/2009	FY2006
7/24/2009	FY2006
7/30/2009	FY2006
8/5/2009	FY2006
8/11/2009	FY2006
8/17/2009	FY2006
8/23/2009	FY2006
8/29/2009	FY2006
9/4/2009	FY2006

Date	Period
7/1/2012	Report Year 1
8/1/2012	Report Year 1
9/1/2012	Report Year 1
10/1/2012	Report Year 1
11/1/2012	Report Year 1
12/1/2012	Report Year 1
1/1/2013	Report Year 1
2/1/2013	Report Year 1
3/1/2013	Report Year 1
4/1/2013	Report Year 1
5/1/2013	Report Year 1
6/1/2013	Report Year 1
7/1/2013	Report Year 1
8/1/2013	Report Year 1
9/1/2013	Report Year 1
10/1/2013	Report Year 2
11/1/2013	Report Year 2
12/1/2013	Report Year 2
1/1/2014	Report Year 2
2/1/2014	Report Year 2
3/1/2014	Report Year 2
4/1/2014	Report Year 2
5/1/2014	Report Year 2
6/1/2014	Report Year 2
7/1/2014	Report Year 2
8/1/2014	Report Year 2
9/1/2014	Report Year 2

Example of an irregular report year

After a "period" column has been added, select "next" in the wizard.

Step 3: Convert energy data to units of MMBtu and from site to source

Prior to calculating performance indicators, the energy data entered in the tool needs to be converted from site to source. In addition, all energy data must be in units of MMBtu.

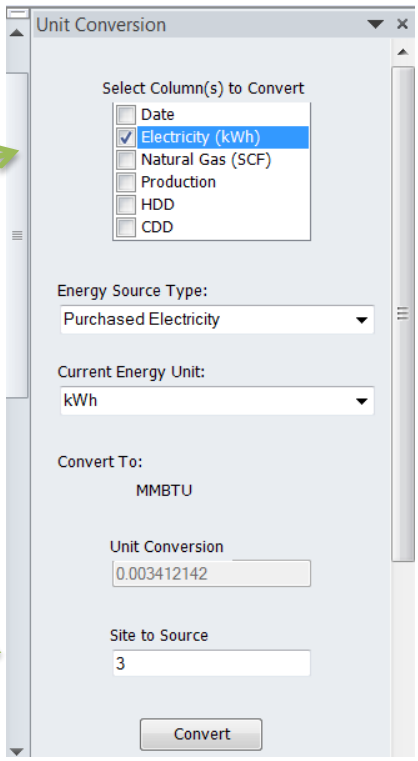
Source or primary energy accounting ensures that the total energy required to generate, transmit, and distribute electricity from the power generation source to the end user is factored into a company's energy consumption metrics. Source energy accounting should also be used for purchased energy streams such as steam, chilled water, or compressed air that are generated outside the boundary of the facility, Better Plants pledge, or SEP commitment. The default site to source conversion factors present in the tool are based on the *Superior Energy Performance Measurement and Verification Protocol for Industry*. The multipliers represent the input unit of energy required at the fuel production site to produce each unit of energy delivered to each individual facility. The default multipliers present in the tool can be edited prior to running the tool in the "Unit Conversion" window of the wizard.

If the energy data has not been converted to source data and units of MMBtu, select "Convert Units" on the "Energy Data Conversions" step of the wizard. This will open the "Unit Conversion" window.

In the first box, select the column containing the energy data you wish to convert. Only select columns with the same unit and energy source type. I.E. if two columns containing electricity in KWh exist in the sheet, both columns can be selected. However, if one column contains electricity in units of kWh and a second contains natural gas in SCF, both cannot be selected at the same time.

In the "Current Energy Unit" box, select current unit for the column selected.

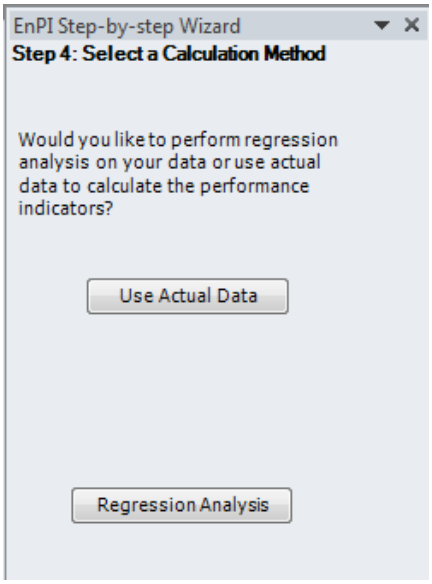
The default site to source conversion factors are based on the Superior Energy Performance M&V Protocol. These values can be edited prior to selecting "convert".



After "convert" is selected, a column will be added to the table for the energy source selected in units of MMBtu. The name of the new column will be the original column name with "MMBtu" added at the end the title. If the previous unit was listed in the original column header, it will be repeated in the new column. The new column title can be edited by removing the previous unit if needed. Repeat this step until all energy columns are converted to source and units of MMBtu.

Step 4: Select a method for calculating performance indicators

After all the energy data has been converted, the next step is to select a method for calculating the performance indicators. If "use actual" is selected, the percent improvement will be calculated using the energy intensity for the baseline and current reporting year. If "use regression" is selected, the percent improvement will be calculated using the modeled and actual energy consumption. The modeled (or predicted) energy consumption will be calculated using regression analysis.



Step 5: Select data for calculations

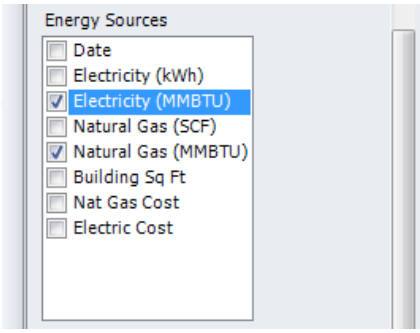
If "Use actual" is selected on step 4, the user will be prompted to select the energy sources, production, building square feet, and baseline year.

If "Regression Analysis" is selected on step 4, the user will be prompted to select the energy sources, variables, baseline year, and model year.

The following section discusses the data that should be selected when either "Regression Analysis" or "Use Actual" is selected as the calculation method.

In the "energy sources" box, only select the columns containing energy data in units of MMBtu if participating in the Better Plants or SEP Program. Columns containing energy data that have not been converted to source data or units of MMBtu should not be selected.

Data in all columns selected will be included in the calculations. Therefore, if an electricity column in both units of kWh and MMBtu are selected, the total amount of electric included in the calculation will be too high and inaccurate.



If regression analysis is selected on step 4, a "variables" box will appear on this step. Select the variables you wish to consider for regression analysis. It is recommended to at least select production as a variable when using regression analysis.

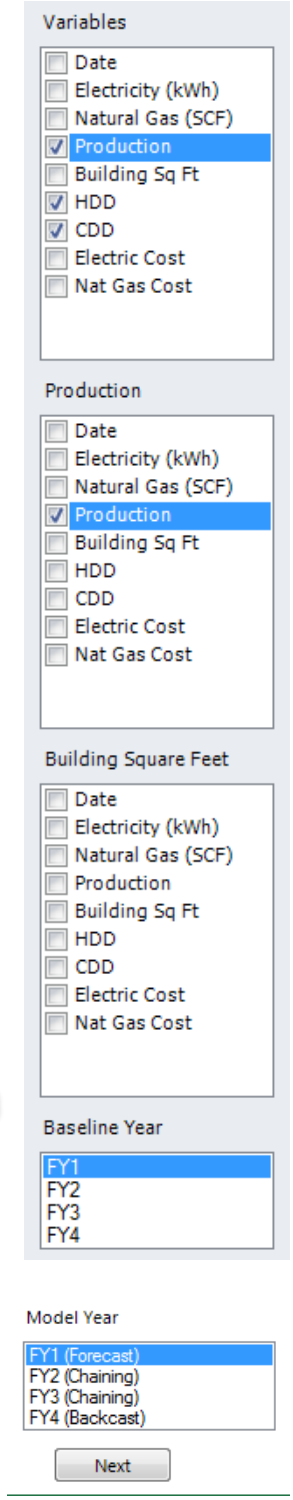
If "use actual" was selected as the calculation method, select all columns containing production data in the "Production" box. All columns selected in the production box should be in the same units. The data in columns identified as production are used to calculate the production energy intensity for the facility.

In the "building square feet" box, select the columns containing building square feet data. Like the production box, if regression analysis is selected as the calculation method, the "building square feet" input box will not appear.

In the box labeled "baseline year", select the baseline year for the facility.

If regression analysis is selected as the calculation method, the user will be prompted to select a "model year". The year selected as the model year will be used to develop a linear equation used to predict the energy use for the remaining years. For more information on the regression methods (forecast, chaining and backcast), see the [Superior Energy Performance Measurement and Verification Protocol](#).

After identifying your input columns, select "Next" to be taken to the "Energy Cost" screen.



For most cases, the best model year for the data set is usually determined through trial and error. The model year that produces the best regression statistics (variable p-values, model p-value and R-squared) and is valid for the years being normalized should be selected. The regression statistics and validity of the model are discussed further in Step 7.

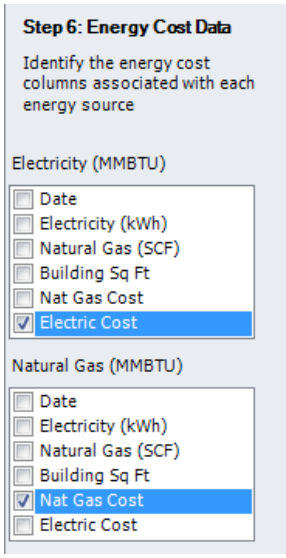
When running the tool on a data set for the first time, users are encouraged to first set the baseline year as the model year. The forecast method is the most commonly used regression methodology. It is typically appropriate when the first year of collected data serves as the baseline year and the data can produce a statistically significant model.

If the baseline year does not provide a statistically valid model, users are encouraged to re-run the tool selecting different years as the model year until a statistically valid model is found.

After the energy sources, variables, production, building square feet, baseline year, and model year have been selected, select "Next".

Step 6: Select energy cost data if provided (OPTIONAL)

After selecting "Next" on step 5, you will be prompted to identify the columns which contain energy cost data. This step is optional and can be skipped if you do not have energy cost data in your file or do not wish to include annual cost savings in the outputs. If you wish to skip this step, select "Next" at the bottom of the input screen.



The energy cost data entered should be the total cost from your utility bill for the timeline corresponding to the period column. Energy cost data for each period must be in the same row as the energy source data it corresponds to.

The labels shown above each of the entry boxes will correspond to the columns identified as the "Energy Sources" on step 5. Below each energy source, select the one column containing the energy cost data for the identified energy source.

A cost column must be selected for each energy source. Therefore, if cost data is not available for all of the energy sources entered, the cost savings cannot be calculated for the facility.

After the energy cost columns have been identified, select "Next".

Step 7: CO_2 Avoided Emissions Data

After selecting "Next" on step 6, you will be brought to a screen where you can choose to select or enter a CO_2 avoided emissions factor. This step is optional and can be skipped by selecting "Calculate" without identifying an Energy Source for each Energy column.

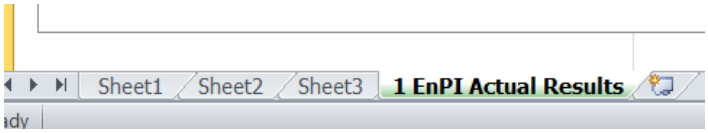
If you wish to calculate avoided CO_2 emissions, identify each energy column by selecting an "Energy Source" from the drop down. If "Electricity", "Fuel Oil", "Coal" or "Other Fuels" is selected as the Energy Source, you will be prompted to select a "Fuel Type/Region". The source of the factors for all energy types with the exception of electricity is the EPA Emissions Factors for Greenhouse Gas Inventories, last updated April 2014. Emissions factors for electricity are from the EPA eGRID 2010 v1.0. A custom emissions factor can be entered by selecting "custom" as the energy source.

Step 8: Review results

After "calculate" is selected on step 5, the tool will calculate the performance indicators for the facility. The results produced by the tool will vary depending on whether actual energy values were used for the calculations, or if regression analysis was used to calculate the performance indicators.

"Use Actual" Results

If "use actual" is selected on step 4, the EnPI tool will create one output sheet after "calculate" is selected on step 5.



The sheet labeled "EnPI Actual Results" shows the performance indicators calculated for each reporting year.

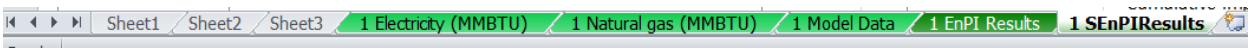
On the top of the "EnPI Actual Results" sheet, a table is displayed showing the energy use by type, total energy use, annual energy savings by type, estimated cost savings by type, production, production energy intensity, improvements, and savings. The column and row titles shown on this page cannot be changed. The calculations are dependent on the titles. If the titles change, the calculations will not show up correctly.

	A	B	C	D	E
1	General Energy Performance Results				
2					
3		FY1	FY2	FY3	FY4
4	Electricity (MMBTU)	15,865	14,875	10,575	8,340
5	Natural Gas (MMBTU)	463	358	172	174
6	TOTAL (MMBtu)	16,328	15,233	10,747	8,514
7	Electricity (MMBTU) Annual Savings	0	990	5,290	7,526
8	Electricity (MMBTU) Estimated Cost Savings	$ -	$ 7,740.35	$ 51,084.94	$ 55,188.35
9	Natural Gas (MMBTU) Annual Savings	0	105	292	289
10	Natural Gas (MMBTU) Estimated Cost Savings	$ -	$ 747.56	$ 1,533.33	$ 5,747.29
11	Total Production Output	149,341	122,786	64,775	43,040
12	Production Energy Intensity (MMBtu/unit production)	0.109	0.124	0.166	0.198
13	Total Improvement in Energy Intensity (%)	0.00%	-13.47%	-51.74%	-80.92%
14	Annual Improvement in Energy Intensity (%)	0.00%	-13.47%	-38.27%	-29.18%
15	Total Savings Since Baseline Year (MMBtu/Year)	0	1,095	5,582	7,815
16	New Energy Savings for Current Year (MMBtu/year)	0	1,095	4,487	2,233
17	Estimated Annual Cost Savings	$ -	$ 8,487.91	$ 52,618.27	$ 60,935.65

Below the table, plots are displayed showing the energy use, intensity, and improvements for each year.

"Regression Analysis" Results

If "Regression Analysis" is selected on step 4, the EnPI tool will create three types of output sheets after "calculate" is selected on step 5. The calculations within the tool are dependent on the sheet names. If the sheets are renamed after a regression is run, the tool will not perform properly.



A sheet containing all possible models will be produced for each energy source.

1 Electricity (MMBTU) Models

The table below shows all possible models for 1 Electricity (MMBTU) consumption. The model highlighted in green in the table below is the model with the highest Adjusted R2 value. If "true" is shown in column B, the model is designated as valid. A model is considered valid if the model p-value is less than 0.10. The model highlighted in green is used to calculate the adjusted data on the EnPI Results, SEnPI Results, and Adjusted Data tabs. If the model is switched, the corresponding data will be updated with the model selected. The models can be switched using the "Change Models" icon in the top navigation.

Model Number	Model is Appropriate for SEP	Variables	Variable p-Values	R2	Adjusted R2	Model p-Value	Formula
7	TRUE	Production	0.0000	0.9398	0.9172	0.0000	(0.0378934327071224 *
		HDD	0.0826				
		CDD	0.0336				
5	TRUE	Production	0.0000	0.9102	0.8902	0.0000	(0.0344023534416196 *
		CDD	0.1928				
1	TRUE	Production	0.0000	0.8904	0.8794	0.0000	(0.0344390588980382 *
4	FALSE	Production	0.0000	0.8904	0.8661	0.0000	(0.0345046854159836 *
		HDD	0.9655				
6	FALSE	HDD	0.3521	0.1163	-0.0801	0.5734	(-0.196202130615188 * [
		CDD	0.7167				

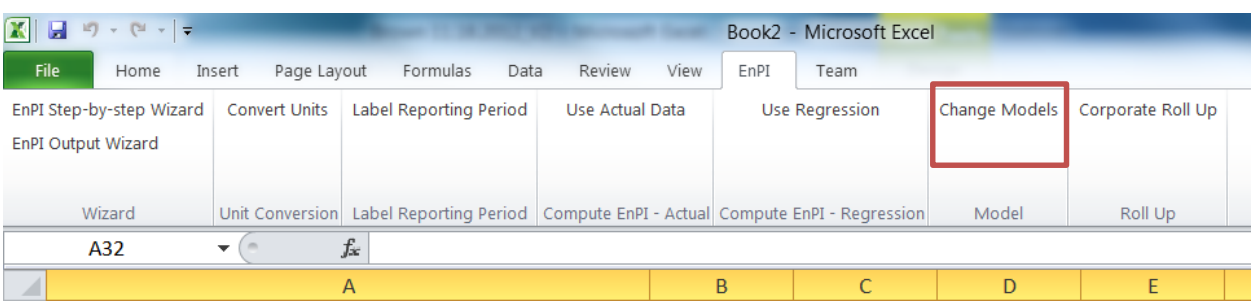
The models will be sorted first by whether or not they meet SEP requirements, and second by their adjusted R-squared values. A model is considered appropriate for SEP if all of the following criteria are met:

1. The model p-value is less than 0.10
2. All variable p-values are less than 0.20
3. At least one variable p-value is less than 0.10
4. The R-squared value for the model is greater than 0.50

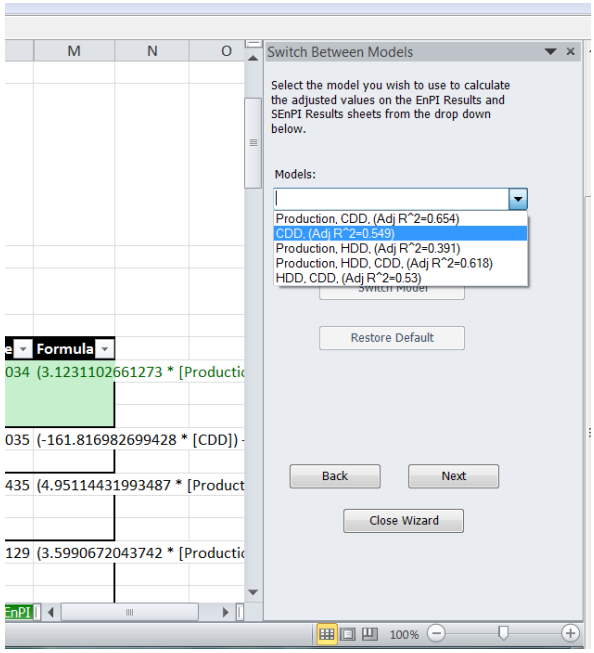
The p-value represents the probability that a derived value is not correlated to another value. This statistic is used to determine the significance of a modeled result. A low p-value represents a high correlation between two variables. The R-squared value represents the measure of the extent to which variations in the dependent variable from its mean value are explained by the regression model.

Switch between Models

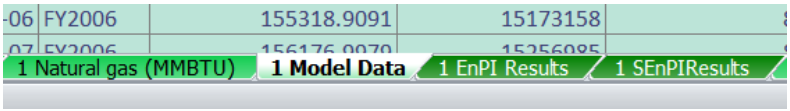
The model used in the calculations can be changed using the "change models" option in the top navigation. Prior to selecting "change models" the user must first navigate to the sheet containing the model equations.



In the “switch between models” window, a drop down listing the models sorted based on their adjusted R-squared values will appear. The variables used in each model and the corresponding adjusted R-squared values will appear in the drop down. To change the model used in the calculations, select the model you wish to change to in the drop down and then select “switch models”.



This will update the model used to calculate the modeled energy use on the “Model Data” sheet and the model used to calculate the improvements and savings on the “EnPI Results” and “SEnPI Results” sheets.



On the “Model Data” sheet, the original inputs and modeled energy data will appear. If the model is determined to be invalid for a reporting period according to SEP requirements, a warning will appear at the top of the table and the year that is determined to be out of range for the model will be red.

For SEP, a model is considered valid if the average of the variables (e.g. production, cooling degree days, heating degree days) used to calculate the modeled consumption from the model falls within either:

1. The range of observed data that went into the model OR
2. Three standard deviations from the mean of the data that went into the model

For more information on the modeled consumption, variables and requirements for the model see the SEP Measurement and Verification Protocol.

To the right of the “Model Data” sheet, two sheets containing totals for the facility are shown. These sheets show tables listing the actual totals, total of modeled values, SEnPI, cumulative improvements, annual improvements, total energy savings since baseline year, and estimated cost savings if cost data is entered into the tool. The “EnPI Results” are formatted for Better Plants Participants and general users. The “SEnPI Results”

are formatted for SEP Participants. The column and row titles shown on these pages cannot be changed. The calculations are dependent on the titles. If the titles change, the calculations will not show up correctly.

	A	B	C	D	E	F	G	H
1	**General Energy Performance Results**							
2	The table below shows the unadjusted and adjusted energy consumption and intensity data. The models used to adjust the data for each energy source are shown below the plots and on the individual sheets for each energy source. Note that the tool selects the model that is appropriate for the SEP Program and has the highest adjusted R-squared value.							
3								
4		FY1	FY2	FY3	FY4			
5	Electricity (MMBTU)	15,865	14,875	10,575	8,340			
6	Natural Gas (MMBTU)	463	358	172	174			
7	TOTAL (MMBtu)	16,328	15,233	10,747	8,514			
8	Total Production Output	149,341	122,786	64,775	43,040			
9	Production Energy Intensity (MMBtu/unit production)	0.109	0.124	0.166	0.198			
10								
11	Adjustment Method	Model Year	Forecast	Forecast	Forecast			
12	Modeled Electricity (MMBTU)	15,865	15,040	12,736	11,783			
13	Electricity (MMBTU) Annual Savings	0	165	2,161	3,444			
14	Electricity (MMBTU) Estimated Cost Savings	$ (991)	$ 276	$19,631	$28,030			
15	Modeled Natural Gas (MMBTU)	463	414	288	237			
16	Natural Gas (MMBTU) Annual Savings	0	56	117	63			
17	Natural Gas (MMBTU) Estimated Cost Savings	$ 15	$ 406	$ 551	$ 903			
18	Total of Modeled Values	16,328	15,454	13,024	12,021			
20	Total Improvement in Energy Intensity (%)	0.00%	1.43%	17.49%	29.17%			
21	Annual Improvement in Energy Intensity (%)	0.00%	1.43%	16.06%	11.69%			
22	Total Energy Savings since Baseline Year (MMBtu/Year)	0	221	2,278	3,507			
24	New Energy Savings for Current Year (MMBtu/year)	0	221	2,057	1,229			
25	Adjustment for Baseline Primary Energy Use (MMBtu/year)	0	-874	-3,304	-4,308			

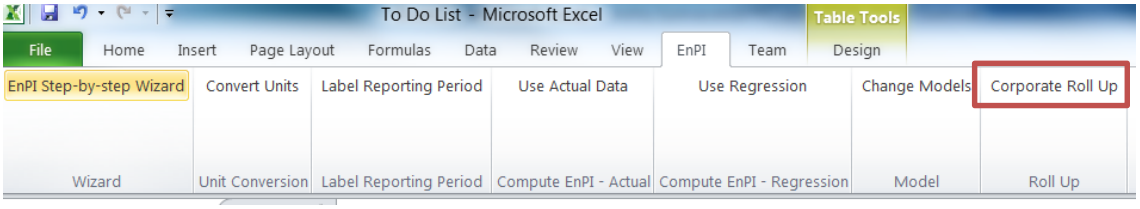
	A	B	C	D	E	F	G	H
1	**Superior Energy Performance Results**							
2	The table below shows the unadjusted and adjusted energy consumption and intensity data. The models used to adjust the data for each energy source are shown below the plots and on the individual sheets for each energy source. Note that the tool selects the model that is appropriate for the SEP Program and has the highest adjusted R-squared value.							
3								
4		FY1	FY2	FY3	FY4			
5	Electricity (MMBTU)	15,865	14,875	10,575	8,340			
6	Natural Gas (MMBTU)	463	358	172	174			
7	TOTAL (MMBtu)	16,328	15,233	10,747	8,514			
10								
11	Adjustment Method	Model Year	Forecast	Forecast	Forecast			
12	Modeled Electricity (MMBTU)	15,865	15,040	12,736	11,783			
13	Electricity (MMBTU) Annual Savings	0	165	2,161	3,444			
14	Electricity (MMBTU) Estimated Cost Savings	$ (991)	$ 276	$19,631	$28,030			
15	Modeled Natural Gas (MMBTU)	463	414	288	237			
16	Natural Gas (MMBTU) Annual Savings	0	56	117	63			
17	Natural Gas (MMBTU) Estimated Cost Savings	$ 15	$ 406	$ 551	$ 903			
18	Total of Modeled Values	16,328	15,454	13,024	12,021			
19	SEnPI Cumulative	1.000	0.986	0.825	0.708			
20	Cumulative Improvement (%)	0.00%	1.43%	17.49%	29.17%			
21	Annual Improvement (%)	0.00%	1.43%	16.06%	11.69%			
22	Annual Savings (MMBtu/year)	0	221	2,278	3,507			
23	Cumulative Savings (MMBtu)	0	221	2,499	6,006			

The improvements calculated on the "EnPI Results" and "SEnPI Results" sheets are calculated using the methods outlined in the Superior Energy Performance M&V Protocol. For detailed information on the calculation methods used by the tool, see the *EnPI Algorithm* document.

Corporate Roll-up

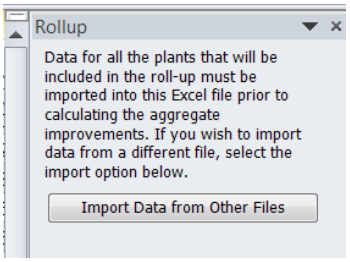
After performance indicators have been calculated for each of the facilities within a corporation, the Corporate Roll-up feature of the EnPI tool can be used to determine the corporate level improvements and savings.

To calculate the corporate improvements and savings, first click on "Corporate Roll Up" in the top navigation or in the EnPI outputs wizard.



This will open up the "Rollup" window. In order to calculate the corporate improvements and savings for a group of facilities, the data for each facility needs to be imported into the same file. If you wish to include data that is not included in the workbook, use the "Import Data from Other Files" option to import the data for each facility.

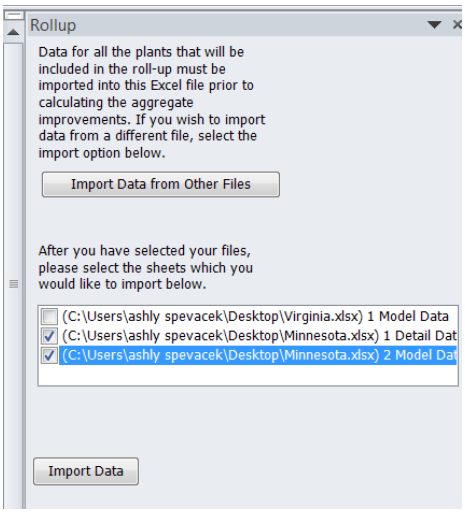
> **Corporate Roll-up Tip**
> *The name of the sheet in which the facility level input data is entered will be used to identify the facility level data in the corporate roll-up results. Before you run the tool at the facility level, rename the input sheet using a label that identifies the facility. This name will then appear in the corporate roll-up results.*



After selecting "Import Data from Other Files" a box will open asking which files you wish to import into the workbook. After selecting the files from your computer, the data from the sheets labeled "EnPI Results" in the plant level files will appear in the corporate roll-up file.

Using this box, select the sheets you wish to import into the workbook. Sheets of data can be imported into the workbook and not included in the roll-up.

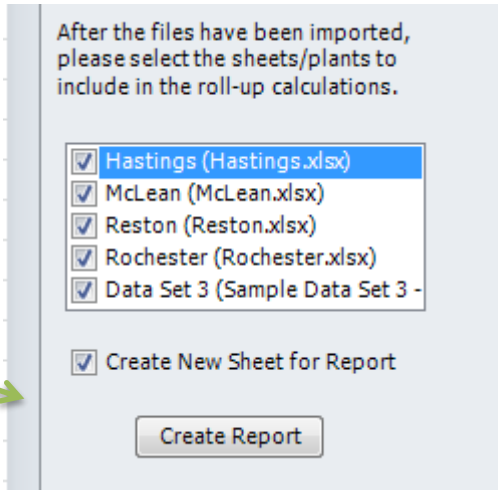
After selecting the files you wish to import into the workbook, select "Import Data"



After selecting "Import Data", a sheet containing the detailed model and actual data for each facility will appear in the workbook. These sheets will also appear as options for facilities to include in the roll-up.

After importing the detailed data for each facility, select the sheets you wish to include in the corporate roll-up in the last box in the rollup window.

Once all the sheets that you wish to include in the roll-up are selected, press "create report". This will create a new sheet labeled "Rollup Data".



Corporate Roll-up

	FY1	FY2	FY3	FY4
Hastings				
Purchased electricity(MMBTU)	4,073	4,306	4,334	4,033
LPG(MMBTU)	7,213	6,963	6,677	6,714
TOTAL Primary Energy Consumed (MMBtu/year)	11,286	11,269	11,012	10,748
TOTAL MODELED Primary Energy Consumed (MMBtu/year)	11,286	11,269	11,012	10,748
Annual Improvement (%)	0.0%	3.6%	2.0%	2.5%
Total Improvement (%)	0.0%	3.6%	5.6%	8.1%
New Energy Savings for Current Year (MMBtu/year)	0	17	258	264
Total Energy Savings since Baseline Year (MMBtu/year)	0	17	275	539
McLean				
Electricity (MMBTU)	302,219	252,204	274,129	267,194
Natural Gas (MMBtu)	136,359	113,943	130,994	132,601
TOTAL Primary Energy Consumed (MMBtu/year)	438,578	366,147	405,123	399,795
TOTAL MODELED Primary Energy Consumed (MMBtu/year)	438,578	420,488	440,605	408,602
Annual Improvement (%)	0.0%	12.9%	-4.9%	-5.9%
Total Improvement (%)	0.0%	12.9%	8.1%	2.2%
New Energy Savings for Current Year (MMBtu/year)	0	54,341	-18,859	-26,675
Total Energy Savings since Baseline Year (MMBtu/year)	0	54,341	35,482	8,807
Reston				
Electricity (MMBTU)	1,797,595	1,574,253	1,120,188	1,254,039
Natural gas (MMBTU)	968,488	938,708	677,467	743,413
TOTAL Primary Energy Consumed (MMBtu/year)	2,766,083	2,512,960	1,797,655	1,997,452
TOTAL MODELED Primary Energy Consumed (MMBtu/year)	2,499,635	2,327,169	1,797,655	1,996,835
Annual Improvement (%)	0.0%	2.2%	7.4%	0.0%
Total Improvement (%)	0.0%	2.2%	9.6%	9.6%
New Energy Savings for Current Year (MMBtu/year)	0	80,657	185,791	-267,065

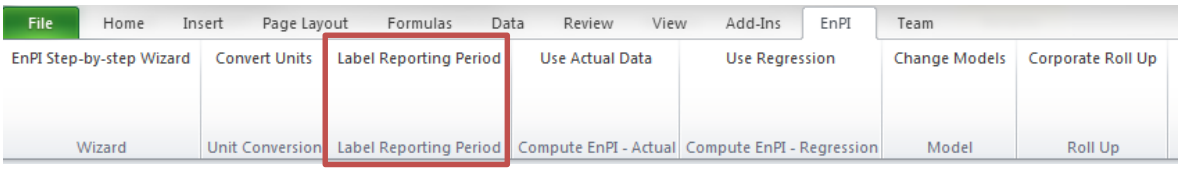
For information on how the Corporate totals shown in the “Corporate Roll-up” Report are calculated, see the *EnPI Algorithm* document.

EnPI Shortcuts

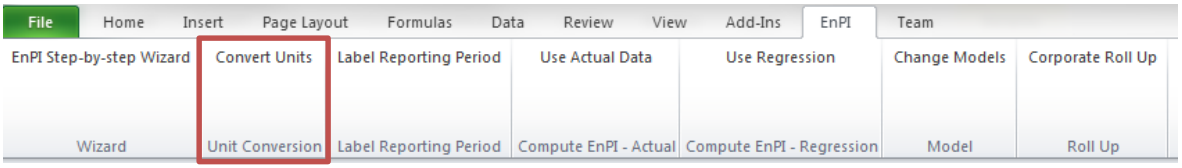
Several of the commands that are included in the EnPI wizard can also be accessed using the EnPI shortcuts, allowing the user to bypass the wizard. The windows from the EnPI Wizard that can be accessed through the shortcuts include:

- Step 2: Assign labels to your reporting periods
- Step 3: Energy data conversions
- Step 5: Select data for calculations (Use Actual)
- Step 5: Select data for calculations (Use Regression)

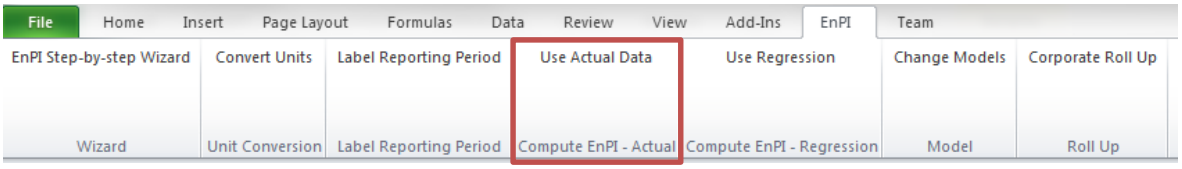
To access “Step 2: Assign labels to your reporting periods” select the “Label Reporting Period” option in the EnPI top navigation as shown below.



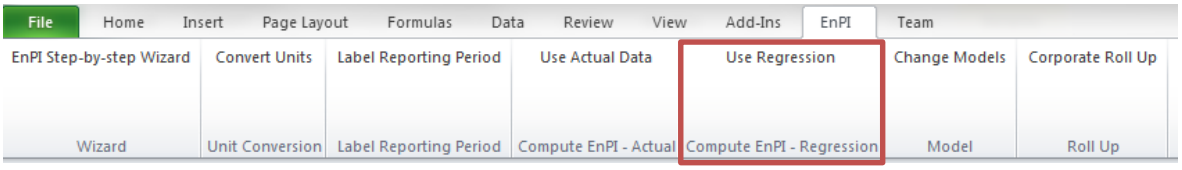
To access "Step 3: Energy data conversions" select the "Convert Units" option in the EnPI top navigation as shown below.



If you would like to calculate the percent improvement using the energy intensity for the baseline and current reporting year, the "Step 5: Select data for calculations" window of the wizard can be accessed by selecting "Use Actual Data" in the EnPI top navigation as shown below.



If you would like to calculate the percent improvement using regression analysis to normalize for multiple variables, the "Step 5: Select data for calculations" window of the wizard can be accessed by selecting "Use Regression" in the EnPI top navigation as shown below.



If you encounter bugs while running the tool, or have specific questions on how to use the tool, contact the AMO eCenter Help Desk at AMOeCenterHelpDesk@ppc.com.