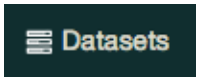
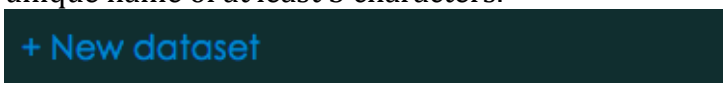
Datasets

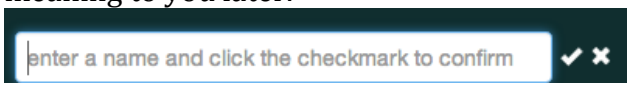
Click on the Datasets icon in the top navbar to reach the Datasets page.



You will need to define at least one dataset in order to use the Chart Widget. A dataset contains a single grouping of building data from which you will create and view charts. You may have as many datasets as you like. Each dataset must have a unique name of at least 3 characters.



For ease of use, you may wish to name your dataset with a description of the data it contains. For instance, you may wish to have a separate dataset for each month of data, so your datasets could be named *January 2014*, *February 2014*, etc. If you are collecting data for more than one building, and you receive data from your utility company for each one separately, you may wish to have datasets like *Building One Janurary 2014*, *Building Two January 2014*, etc. Choose any name that will have meaning to you later.



You can change the name of a dataset at any time by clicking on the edit icon, or you may delete a dataset that you no longer use, or if you wish to replace the data it contains. When you import data into a dataset it will **append** that data to whatever already exists in that dataset; to **replace** data you must delete the dataset and start over.

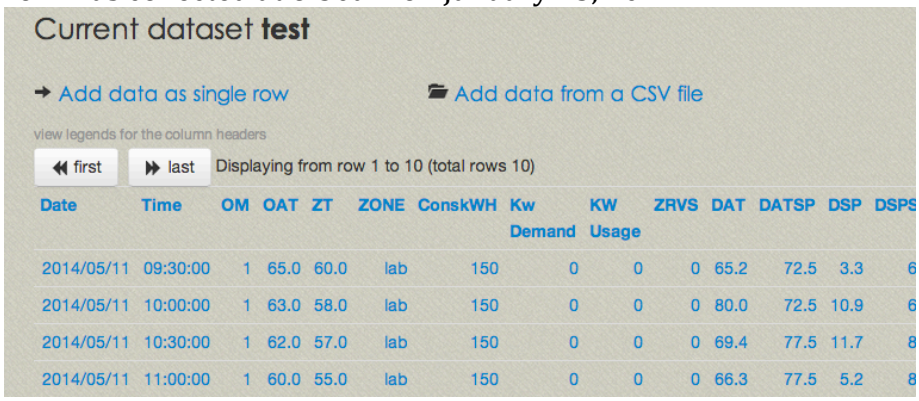
Once you have created the datasets you need, click on the import icon to add data to your dataset. We will cover the specifics of importing data in a later section; for now, know that once your data has been imported, you can view that raw data on the Tables page.

Tables

Click on the Table icon in the top navbar to reach the Tables page.

If you have imported data, you will see the values here in the table. The data is shown ten rows at a time, and which rows are currently displayed is shown next to the navigation buttons that allow you to move between pages.

Each table row begins with a date and time that corresponds to the values in that row; if your first row is labeled 2014-01-25 06:30:00, it means that the data in that row was collected at 6:30am on January 25, 2014.



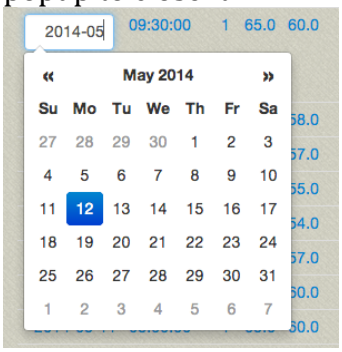
Date	Time	OM	OAT	ZT	ZONE	ConskWH	Kw Demand	KW Usage	ZRVS	DAT	DATSP	DSP	DSPS
2014/05/11	09:30:00	1	65.0	60.0	lab	150	0	0	0	65.2	72.5	3.3	6
2014/05/11	10:00:00	1	63.0	58.0	lab	150	0	0	0	80.0	72.5	10.9	6
2014/05/11	10:30:00	1	62.0	57.0	lab	150	0	0	0	69.4	77.5	11.7	8
2014/05/11	11:00:00	1	60.0	55.0	lab	150	0	0	0	66.3	77.5	5.2	8

You may notice that some columns do not have data, depending on the data that was present in your import spreadsheet. This will not skew your data when you view each chart; zero values are ignored and not displayed.

If you need to adjust any of the data after it has been imported, simply click on the data and you will see the data turn into an editable field. Click the checkbox to complete the change.

If you need to adjust the date or time on any of the rows, you will see a dialog that will allow you to pick the date or time to which to change the current data, rather than a text box. This ensures that the formats are valid for the application. After selecting the appropriate new value, simply click outside the popup to close it; the data is saved automatically.

If the date requires a significant adjustment, you can type the date in the date field and the date picker will automatically jump to the date you type. Click the correct date in the date picker once you are in the correct month, and click outside the popup to close it.



If you wish to add new data to the dataset manually, click on Add data as single row. You must include a date and time for the row, but all other data is optional. As with imported data, zero values are simply ignored.

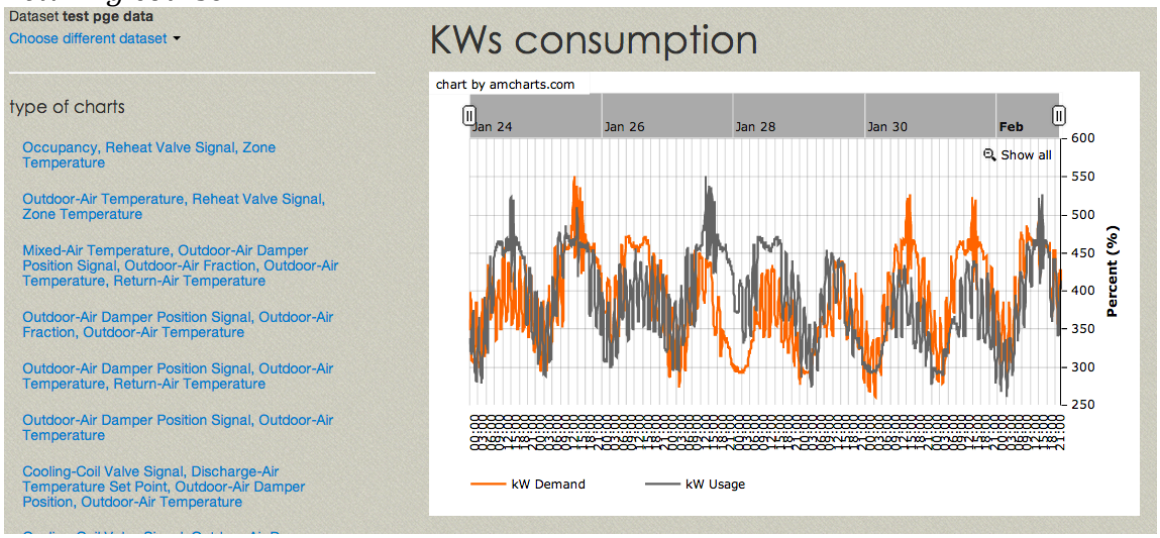
Note that you may add all of your data manually, if you do not have a spreadsheet to import. Once you have created a dataset, click the Table icon to reach the Tables page directly from the Datasets page.

When you are satisfied with the data in your dataset, go to the Charts to see your data displayed.

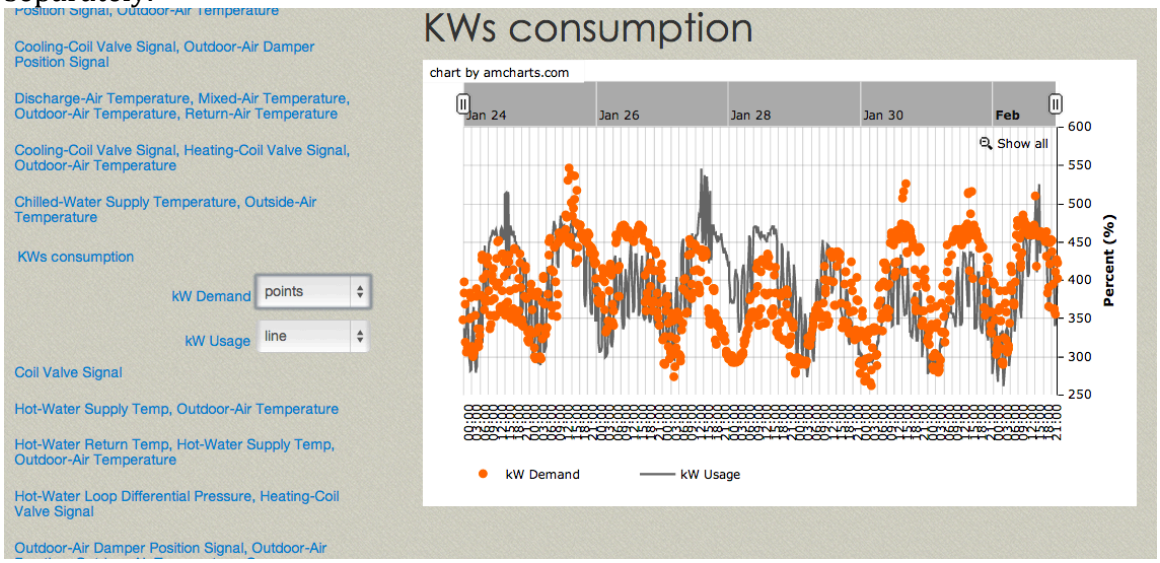
Charts

Click on the Chart icon in the top navbar to reach the Charts page.

You may need to select a dataset on the Charts page before the application can display the list of charts available. Once you do, you will see a list of available charts appear down the left side of the screen. The title of each chart indicates the data that is displayed in the chart, and they appear in the order they occur in the *Building Retuning* course.

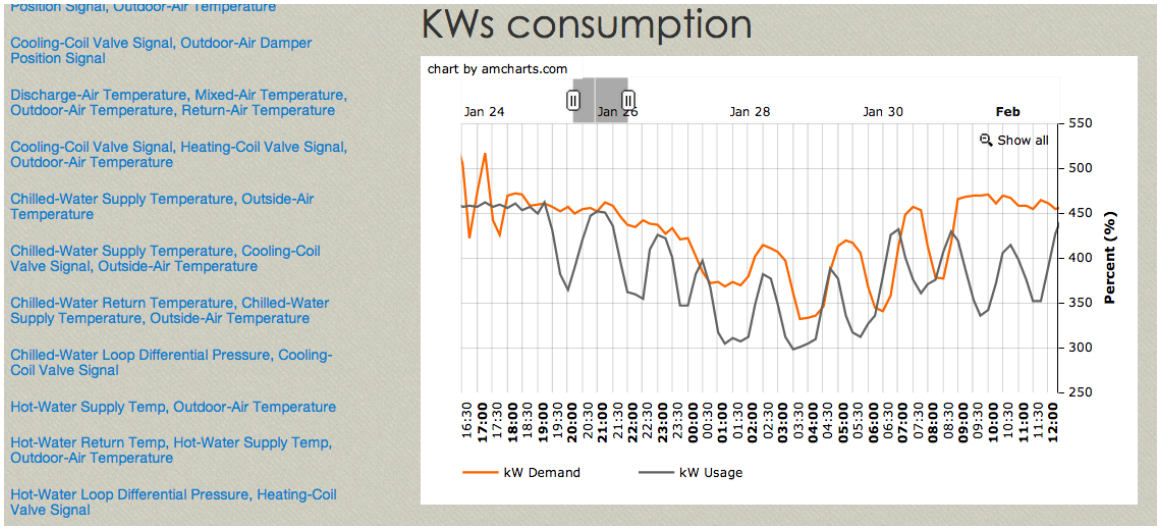


Once you click on a chart, you will see its data populate in the chart area in the middle of the screen, and on the left, beneath its name, each set of data included in the chart appears next to a pull-down menu. You may use this pulldown menu to change the way the data is displayed in the chart: view the data as a line, as a column (bar graph), or as points. Each individual data type can be changed separately.

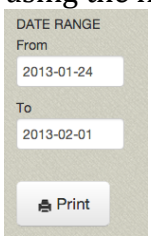


In the chart itself, you will see a legend at the bottom indicating the color and type of each data type displayed. The x-axis of the chart represents time, and the y-axes represent percentages to the right, and whole numbers (usually temperature in °F) to the left. As you hover over the chart, you will see each individual data point listed as its raw value.

At the top of the chart, you will see two "handles" at either end of the x-axis. You can click and drag these handles to limit the data that you see. If the data is very dense, you can use the handles to shorten the timeframe so you see less data on the chart at one time. The grey area between the handles represents the actual portion of the data currently represented in the chart, and you can click and drag inside the grey area to view other data in the chart.



If you do not wish to use the handles to limit the data, you can choose a date range using the fields at the top right of the window.



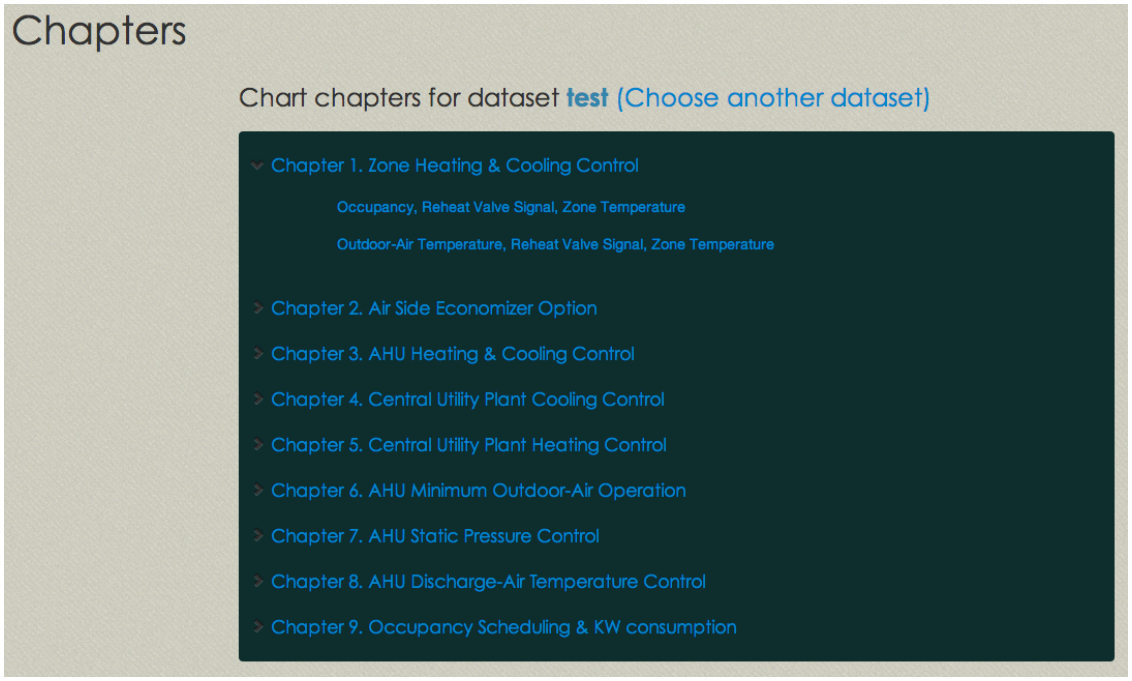
To view a copy of the chart only, suitable for printing, click the *Print* button on the right side of the window.

Finally, to see the specific chapters in which each chart appears, go to the Chapters page.

Chapters

Click on the Chapters icon in the top navbar to reach the Chapters page.

This page displays each of the chapters in the *Building Retuning* course. Click on any chapter name to display, in order, the charts that are referenced in that chapter. Clicking on any of the individual chart names will take you to the Charts page with that chart active.



Importing Data

Most of the data you will want to examine will be imported from third-party sources. Regardless of the source, you will likely find that you need to do some manipulation to the spreadsheet containing the data you wish to import. This section will cover many of the actions you may need to take, but you may also wish to consult other resources for creating a valid CSV file.

The requirements for any data to be imported are as follows:

1. The data must be in a text file, in **CSV** format (comma-separated values)
2. Each row in the file must terminate with a unix-style **line ending (EOL)**
3. The first (and only the first) row of data must contain the column names of the data underneath it
4. Each row of data must contain a **date** field, formatted as YYYY-MM-DD (e.g. 2014-01-02 for Jan 2nd, 2014), and a separate **time** field, in 24-hour format as HH:MM:SS (e.g. 15:30:00 for 3:30pm)
5. The file can have no more than **1000 rows** of data (you may import multiple spreadsheets into the same dataset)

The following data is used by the application:

- Date
- Time
- Cooling-Coil Valve Signal (%) - CCV
- Chilled-Water Loop Differential Pressure - ChWLDP
- Chilled-Water Loop Differential Pressure Set Point - ChWLDSP
- Chilled-Water Return Temp - ChWRT
- Chilled-Water Supply Temp - ChWST
- Chilled-Water Supply Temp set point - ChWSTSP
- Consumption kWH - ConskWH
- Discharge-Air Temp - DAT
- Discharge-Air Temp Set Point - DATSP
- Duct Static Pressure - DSP
- Duct Static Pressure Set Point - DSPSP
- Heating-Coil Valve Signal (%) - HCVS
- Hot-Water Loop Differential Pressure - HWLDP
- Hot-Water Loop Differential Pressure Set Point - HWLDPSP
- Hot-Water Return Temp - HWRT
- Hot-Water Supply Temp - HWST
- Hot-Water Supply Temp Set Point - HWSTSP
- Mixed-Air Temp - MAT
- Outdoor-Air Damper Position Signal (%) - OADPS
- Outdoor-Air Fraction (%) - OAF
- Outdoor-Air Temp (temp) - OAT
- Occupancy Mode - OM

- Return-Air Temp - RAT
- Supply Fan Status (on/off) - SFS
- Supply-Fan Speed (rpm) - SFSpd
- VAV Damper Position Set Point (%) - VAVDPSP
- Zone Damper Position Signal (%) - ZDPS
- Zone Name - ZONE
- Zone Reheat Valve Signal (%) - ZRVS
- Zone Temperature - ZT

There are two ways to import data into the application. The first is to use a pre-determined template. If you have a pre-determined template, you will not have to do any manipulation to the data beyond saving the input file as a CSV file.

If you do not have a pre-determined template, you can import a spreadsheet that meets the requirements, and you will choose which columns in the spreadsheet map to each data type in the application.

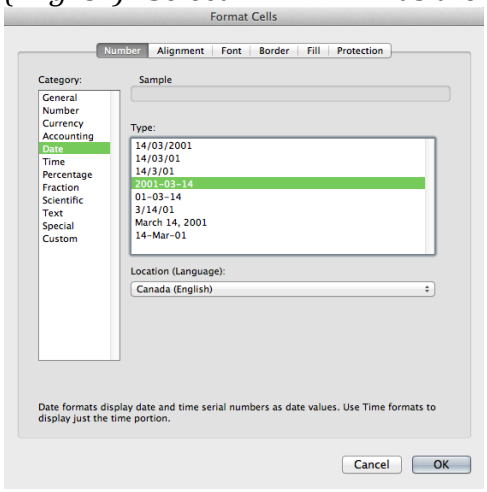
Each spreadsheet to be imported does **not** need to include all of the data that is tracked by the application, and it may include data that is not tracked by the application at all. If your spreadsheet contains interval readings for your building that track the Outdoor-air temperature, the Chilled-water temperature, and the Chilled-water usage in gallons, you can import only the two columns of data that you need, and ignore the last column.

Template – Pacific Gas & Electric Kilowatt Usage/Demand Spreadsheet

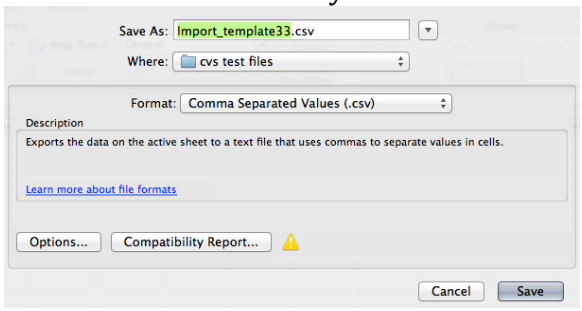
If you have data in this pre-determined template, you need only take the following steps to get it ready for import (always work from a **copy** of your original spreadsheet):

1. Delete rows 1-3 so that row 4 (the column headers) is the first row in the spreadsheet
2. Select column C and choose *Format->Cells* from the menu. Select the *Date* format under *Number* formatting and change the *Location* to *Canada*

(English). Select *2001-03-14* as the date format and click *OK*



3. Make sure your spreadsheet does not have more than 500 rows. If yours contains more data, you will need to separate it in to multiple spreadsheets to import all of the data
4. *File->Save as* and save the active sheet as *Comma-separated values (.csv)*. You may wish to give it a different name to ensure you do not overwrite your file. Note that Excel will ask you to confirm saving the file



Template – Import_Template.xltm

Included with this application was a Microsoft Excel template file *Import_Template.xltm.* When you launch this file, you will be taken to a blank Excel file that includes macros to format your data in a way that the application can accept. If your data source would require a lot of manipulation, you may wish to copy columns of data from your spreadsheet into the template. Remember that you do not need to fill every column with data; simply copy the columns of data that you do have in to their corresponding columns in the template file and leave any other columns blank. The order of the columns (from left to right) is the same as listed above (Date, Time, and then alphabetically by data type).

There are instructions in the *Import_Template.xltm* file, but here also are the steps you need to take to use the *Import_Template.xltm*:

1. Copy the date column from your data source into the first column of the spreadsheet

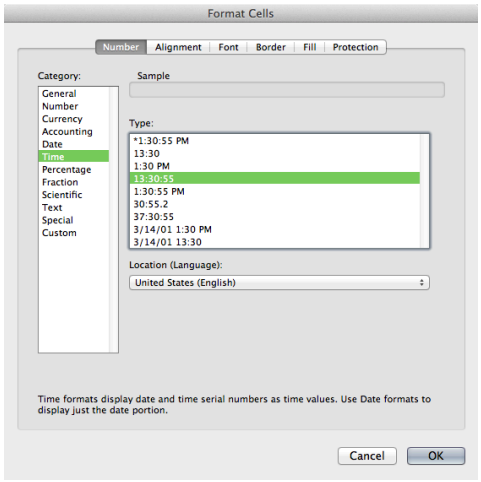
2. Copy the time column from your data source into the second column of the spreadsheet. If you do not have specific times in your data source, set the time in one row to 12:00:00 and copy that value to the entire column. This will set the collection time to noon for each row of the spreadsheet
3. Copy any columns of data from your source into the corresponding row in the template, making sure that you are pasting data in the same order as the date/time columns indicate. With the exception of the *Zone name* column, each cell must contain only a numerical value (no labels or other text). If a column contains a percentage, each number should be between 0 and 1
4. If you have static data, such as *Occupancy Mode*, you can copy the appropriate data it to each row in the spreadsheet. *1* represents the *yes* version of the data, and *0* represents *no* (or *not*). If your building is occupied between 9am and 5pm, for instance, find all of the rows of data where the time is between 09:00:00 and 17:00:00 and copy a *1* in to each row in the *Occupancy Mode* column. Copy a *zero* in to each of the remaining rows. This will ensure that the data is present for the entire chart once imported.
5. Make sure your spreadsheet does not have more than 500 rows. If yours contains more data, you will need to separate it in to multiple spreadsheets to import all of the data
6. On the first sheet of the template, click the *Date & Time Format Adjustment* button
7. Following the instructions in the template, go to *File->Save as* and save the active sheet as *Comma-separated values (.csv)*. You may wish to give it a different name to ensure you do not overwrite your file. Note that Excel will ask you to confirm saving the file

No Template – Manual Import from Excel

If you understand well how to manipulate an Excel spreadsheet, you may wish to import your data source directly (always work from a **copy** of your original spreadsheet). These are some of the steps you may need to take to create an import file that meets the import requirements:

1. Delete any rows that appear before the column headers in your source file, so the column headers are the first row in the spreadsheet. You will use the column headers to map the data from your source into the application, so you may wish to edit some column headers to more closely match the entries in the list above
2. Ensure that there is one column that contains a *Date*, and a separate column containing a *Time* for each row of the spreadsheet. Each row of data represents a single reading of your instrumentation, and the date/time indicates when each reading was taken
3. Select the *Date* column and choose *Format->Cells* from the menu. Select the *Date* format under *Number* formatting and change the *Location* to *Canada (English)*. Select *2001-03-14* as the date format and click *OK*

4. Select the *Time* column and choose *Format->Cells* from the menu. Select the *Time* format under *Number* formatting and change select *13:30:55* as the time format and click *OK*



5. Make sure that each column of data to be imported contains only a numerical value (no labels or other text). If a column contains a percentage, each number should be between 0 and 1
6. Make sure your spreadsheet does not have more than 500 rows. If yours contains more data, you will need to separate it in to multiple spreadsheets to import all of the data
7. *File->Save as* and save the active sheet as *Comma-separated values (.csv)*. You may wish to give it a different name to ensure you do not overwrite your file. Note that Excel will ask you to confirm saving the file

No Template – Manual Import from a text-based CSV file

1. Open your CSV file in a text editor, and note the date format and/or ensure that it contains a 4-digit year and a 2-digit month and day separated by dashes (YYYY-MM-DD or DD-MM-YYYY)
2. Ensure the times are formatted in 24-hour notation as HH:MM:SS
3. Ensure the first line of data contains only your column headers
4. Ensure that the file is saved with unix-style line endings (eol)

Performing the import

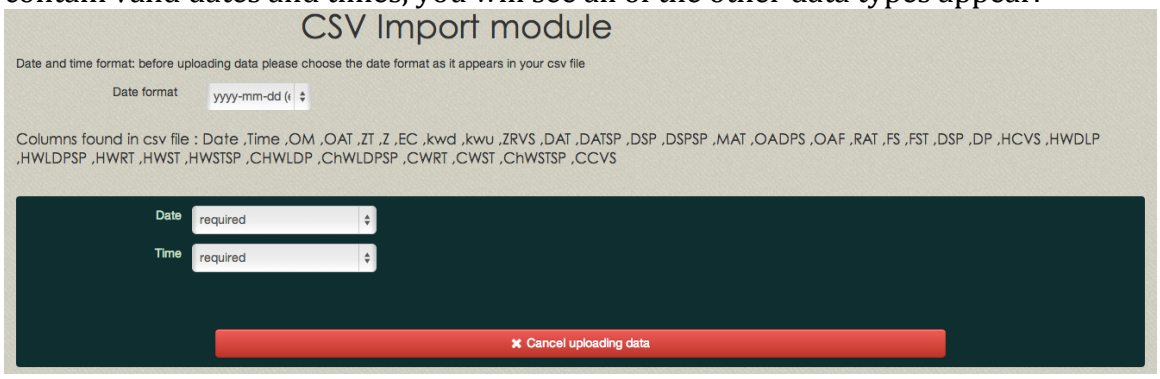
Once the csv file or files are ready, go to the Datasets page in the application. Click on the import icon to the right of the name of the dataset. The application will present a file selection dialog; choose the CSV file that you wish to import.

Please note that depending on the amount of data to be imported, the import routine may take up to 10 minutes. Do not reload your browser window during the import.

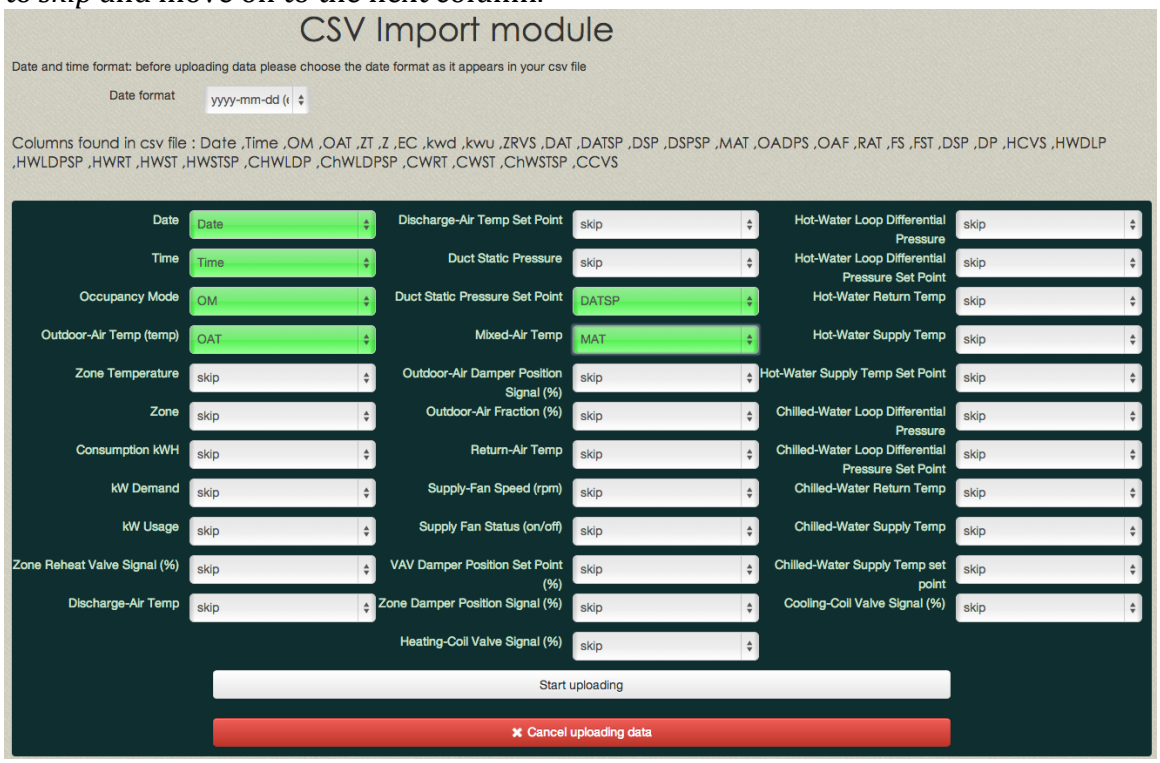
If your file is the *Pacific Gas & Electric Kilowatt Usage/Demand Spreadsheet* Template, the application will auto-detect this and ask you whether your spreadsheet contains Usage data or Demand data (the format is identical for each). Once you click either, the data will import.

If your file is the *Import_Template* Template, the application will auto-detect this and ask you to confirm the import. Once you confirm, the data will import.

If your file is not from a template, the application will auto-detect this. You will be taken to a dialog which will show you the header row detected, and ask you to map the columns to the application's data types. First, select the date format at the top left of the dialog. The date format **must** match what is in your date column, or all the dates will import as zeroes. Once you have done that, identify the date and time columns first. Once the application has determined that the selected columns do contain valid dates and times, you will see all of the other data types appear.



Using the column headers (listed in the dropdown menu next to each data type), map the data in your file to the corresponding data type in the application. If your file does not contain the data for any given data type, select *skip* in the dropdown menu. If the column selected contains valid data, the field will turn green. *If a field is not set to skip and does* ***not*** *turn green, do not attempt to import that column.* Set it to *skip* and move on to the next column.



Once all of the source data has been mapped, click *Start uploading* and the data will import.