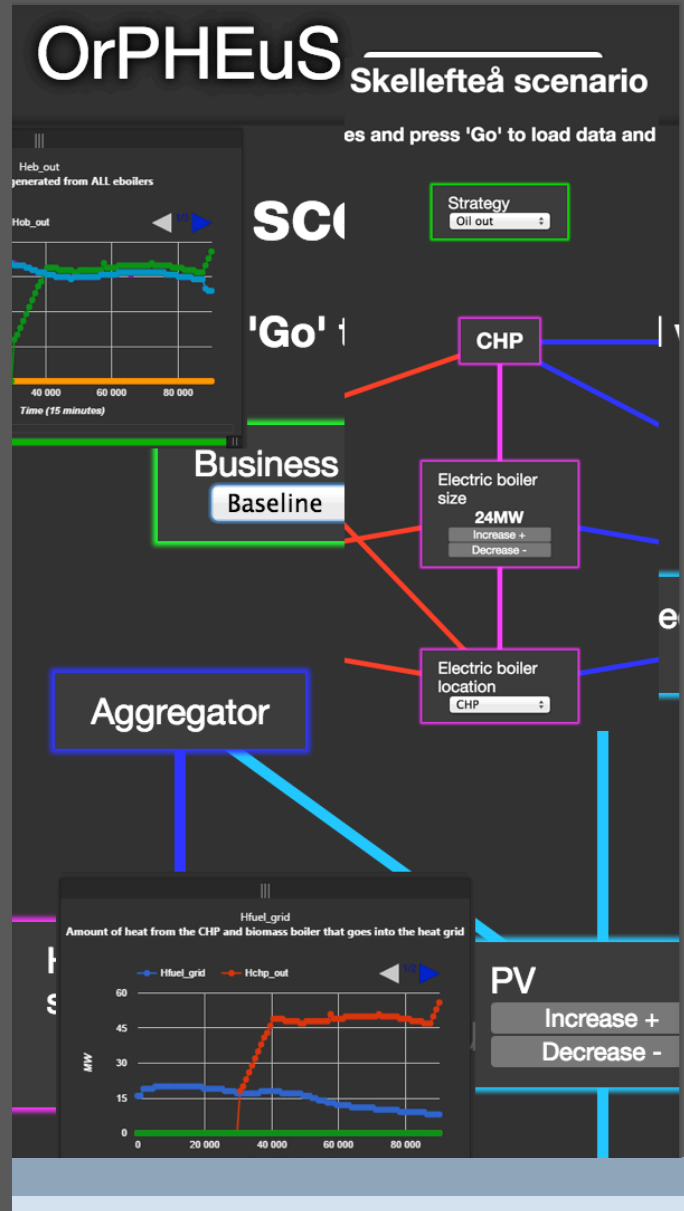


# Luleå Tekniska Universitet

Forskargatan 1  
Skellefteå, Sweden, 93167



# ORPHEUS TOOL GUIDE

22 February 2017

## Orpheus Tool Prerequisites

The following are a list of prerequisites required to access the Orpheus Tool. Please make sure that you have access to all three points below for successful running of the tool. We also explain the need for why each part is necessary and important.

1. **Port Access:** The Orpheus tool uses port 49154 to retrieve data from the server. It is required that this port is not blocked on the network. Some organizations block certain ports on the network to maintain network security and to prevent malicious attacks. To run any software where data is accessed from a remote server, all commercial applications and tools use certain ports. In most cases, when an organization purchases a commercial license to a software tool the ITS department works to open ports necessary for the application to run and makes sure this port is only accessed via the specific tool and no other application. Since, the Orpheus tool is a prototype and not a commercial product, to run a trial of the tool the user may have to request their ITS department to temporarily open the specific port 49154 on the organization network. The other way to access the tool can be to use any public or home network where usually such security restrictions do not exist.
2. **Browser Access:** The Orpheus tool works best in the Google Chrome browser. Please make sure to download and install Google Chrome browser from the following URL:  
<https://www.google.com/chrome/browser/desktop/index.html>
3. **Login Access:** In order to access the Orpheus tool, please use the following username: orpheus and password: newton!2606.  
This is done to restrict random access to the tool and sever for two reasons.
  - a. To prevent access to other protected data on the server relating to the Orpheus project in general and to certain project partners in specific. This data is not for public access and we need to protect it from public access.
  - b. To prevent random malicious attacks on the Orpheus tool and the server.In the future, the tool can be made available on a public server as required by the European Commission.

The following are the two main URLs to access the Orpheus Tool:

1. For the Management View:  
<http://130.240.134.123:8080/orpheus/datafiles/visualization/git/orpheus/viz/index.html>
2. For the Technical Dashboard:  
<http://130.240.134.123:8080/orpheus/datafiles/visualization/git/orpheus/viz/dashboard.html>

The rest of the document presents the details of how to operate and use the tool. We give a step-by-step guide to each button and functionality to enable users to navigate through the tool and view results from simulations that were provided in the Orpheus project.

## Management Dashboard

The management dashboard includes the diagram view for the different scenarios present in the OrPHEuS tool for example, Skellefteå Current, Skellefteå Future, etc.

The user can select the scenario from the drop-down menu at the top of the Management Dashboard as shown in figure 1.

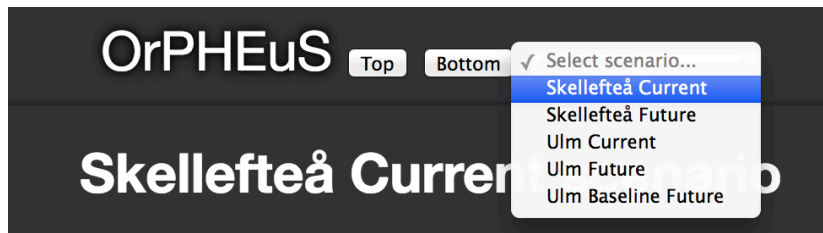


Figure 1: Selecting a scenario in the Management View.

Each scenario has a number of supporting slides to give a new user background information about this scenario. These can be viewed by scrolling down the diagram view as highlighted by the prompt below the diagram. See figure 2.

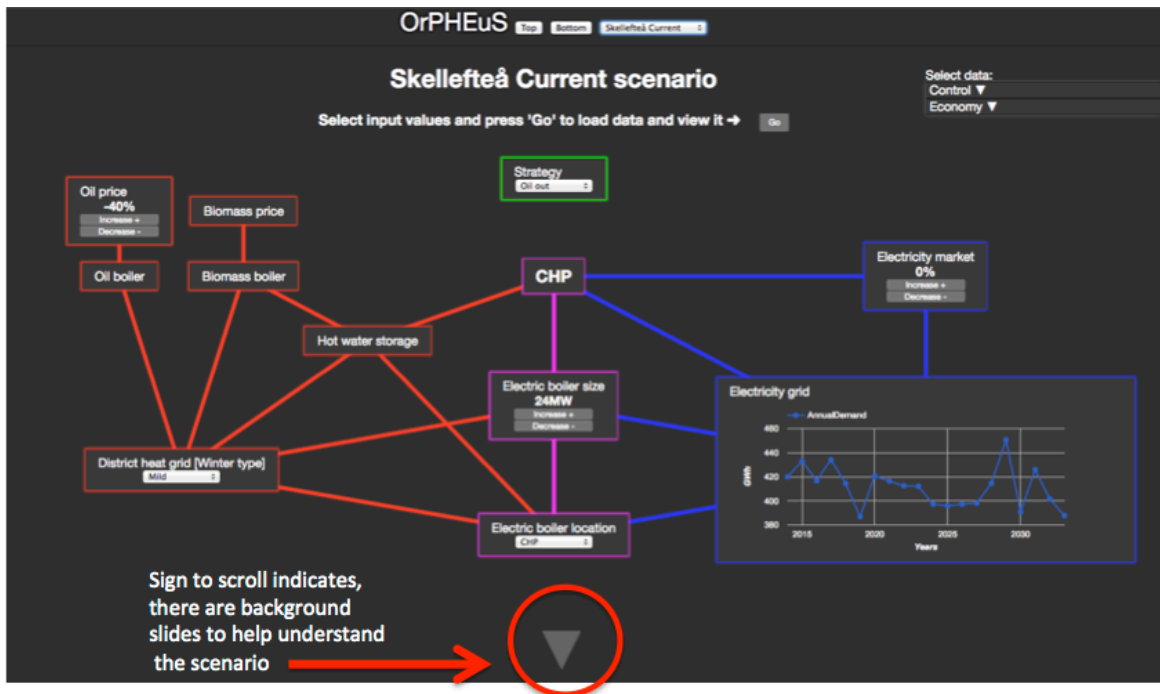


Figure 2: See. Hint to scroll down to view background slides.

The diagram view for each scenario shows the key components considered in that scenario during simulations and the parameters that can be selected and those that are kept fixed for example in the Skellefteå Current scenario in figure 3.

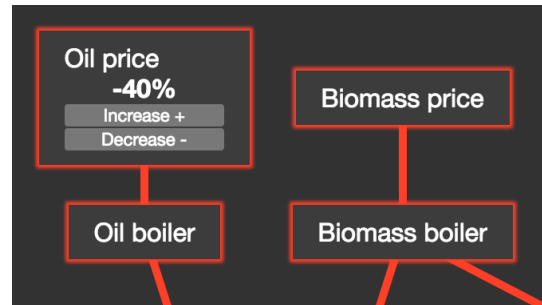


Figure 3: Skellefteå Current scenario, Oil Price can be changed but Biomass price is fixed during simulation.

The ‘Select data:’ panel on the right, see figure 4, shows the files that result from the selection of different parameters as shown in figure 3. Individual graphs can be selected to view in the dashboard.

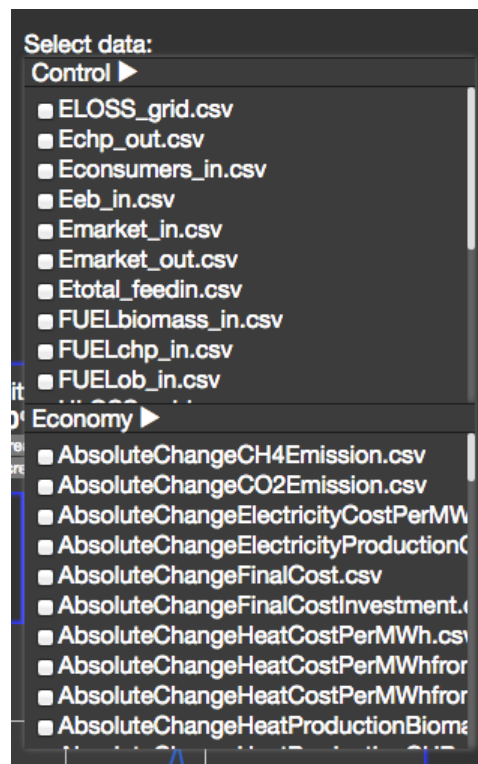


Figure 4: Select data panel.

After selecting the relevant graphs to view press the ‘Go’ Button as shown in figure 5 to view the graphs in the dashboard. If no file is selected all graphs will be shown by default.

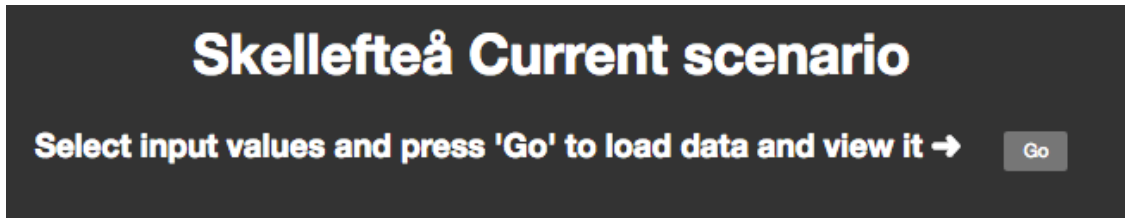


Figure 5: 'Go' button will lead to the Dashboard View with selected graphs.

The 'top' and 'bottom' help in navigating down to the last background/introduction slide and back to the diagram view as shown in figure 6.

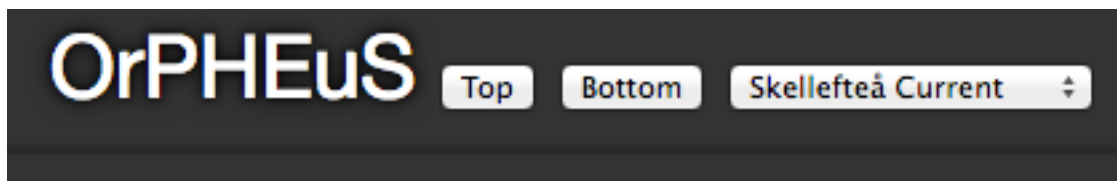


Figure 6: 'Top' and 'Bottom' buttons to navigate down to the last background slide and back up to the diagram view.

Next, the Orpheus Dashboard can be viewed as shown in figure 7.

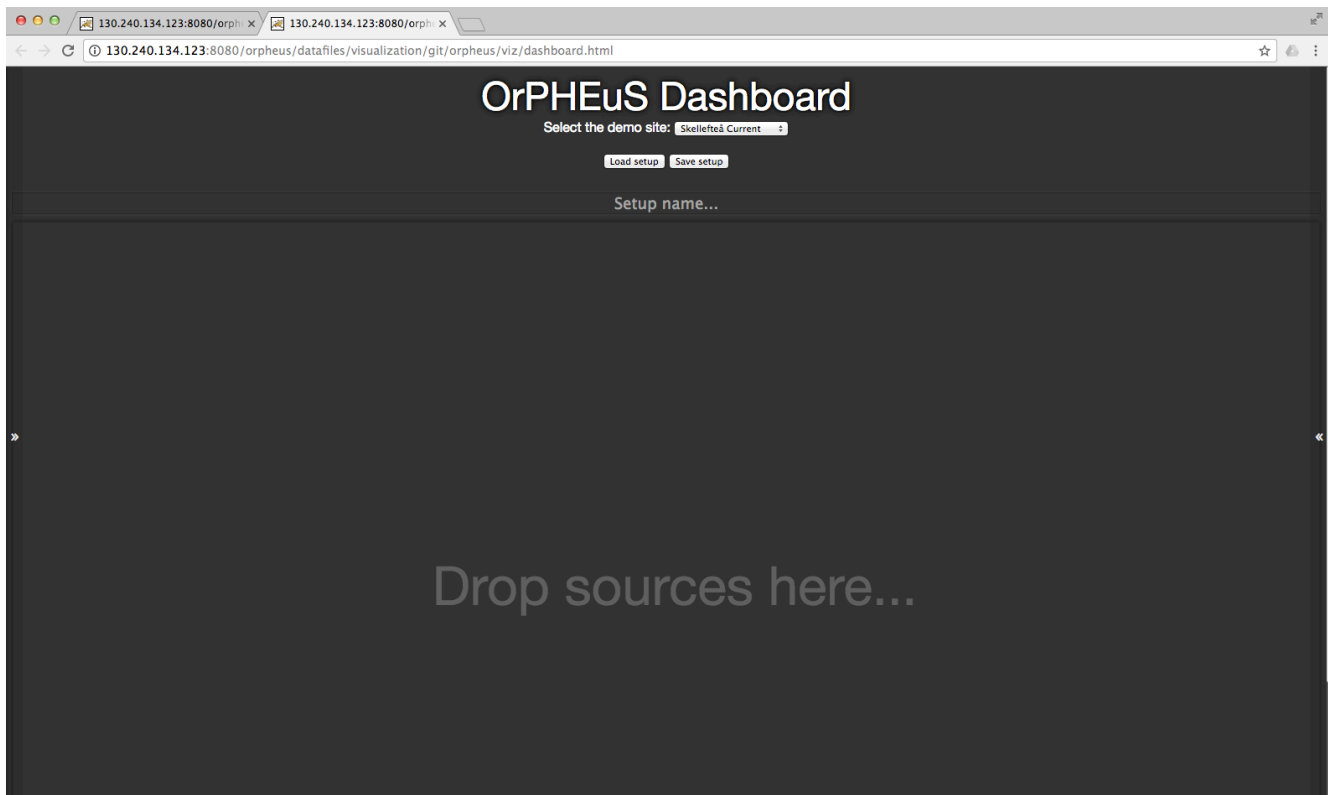


Figure 6: Orpheus Dashboard View.

Figure 7 shows the dropdown list where the user can select the different scenarios present in the Orpheus tool.

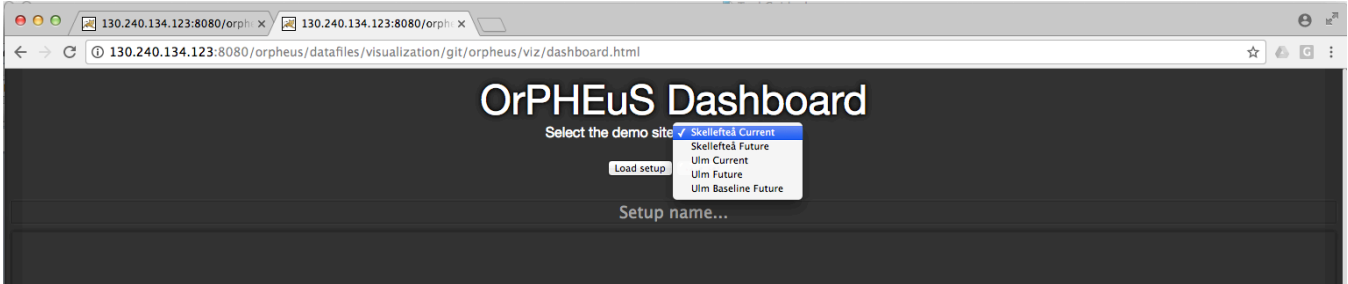


Figure 7: Orpheus Dashboard View with dropdown showing different scenarios.

The Load setup button present under the dropdown list can be used to load a previously saved setup with all the loaded graphs and settings from the .orph file. Similarly, the Save button can be used to save setups that are created by the user including all the opened graphs and settings locally on the user’s computer. This file can be emailed or shared with anyone and the receiver can load the setup in the file on their computer within the Orpheus tool. Each setup can also be given a unique name as shown in Figure 8 the setup name is “Control-Strategy-Oil-Out-CHP-24MW-ColdWinter-ElecPrice-0-OilPrice-0”. This name is also the file name in which this setup will be saved.

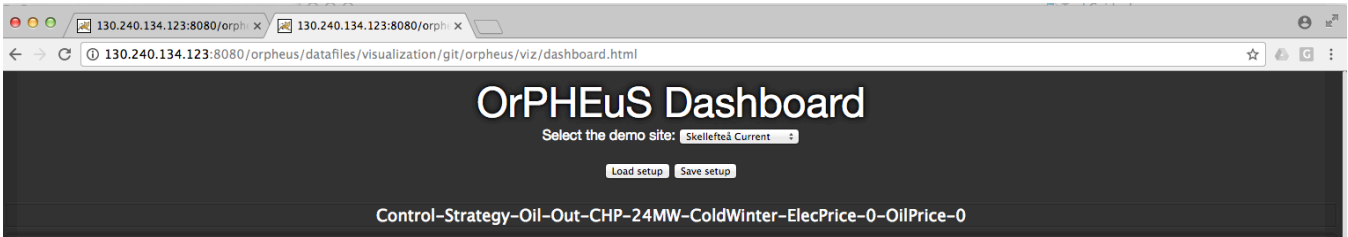


Figure 8: Load and Save setup button along with the Setup name.

After selecting the scenario from the dropdown, click on the two arrows on the left as shown in figure 9 to open the left panels for loading the control or economy data as further shown in figure 10 and 11.

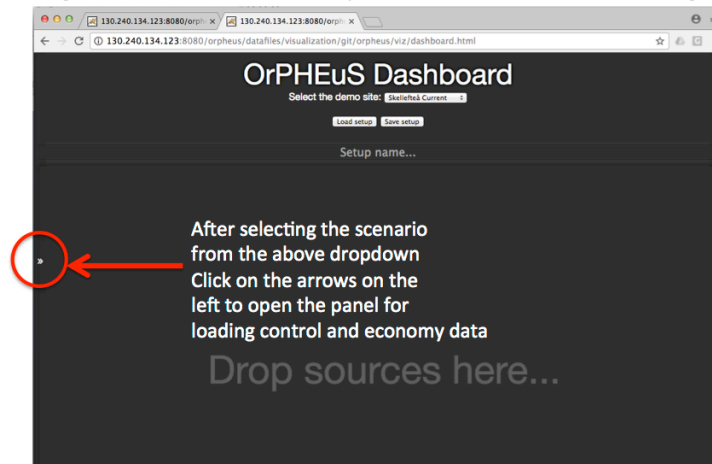


Figure 9: Load and Save setup button along with the Setup name.

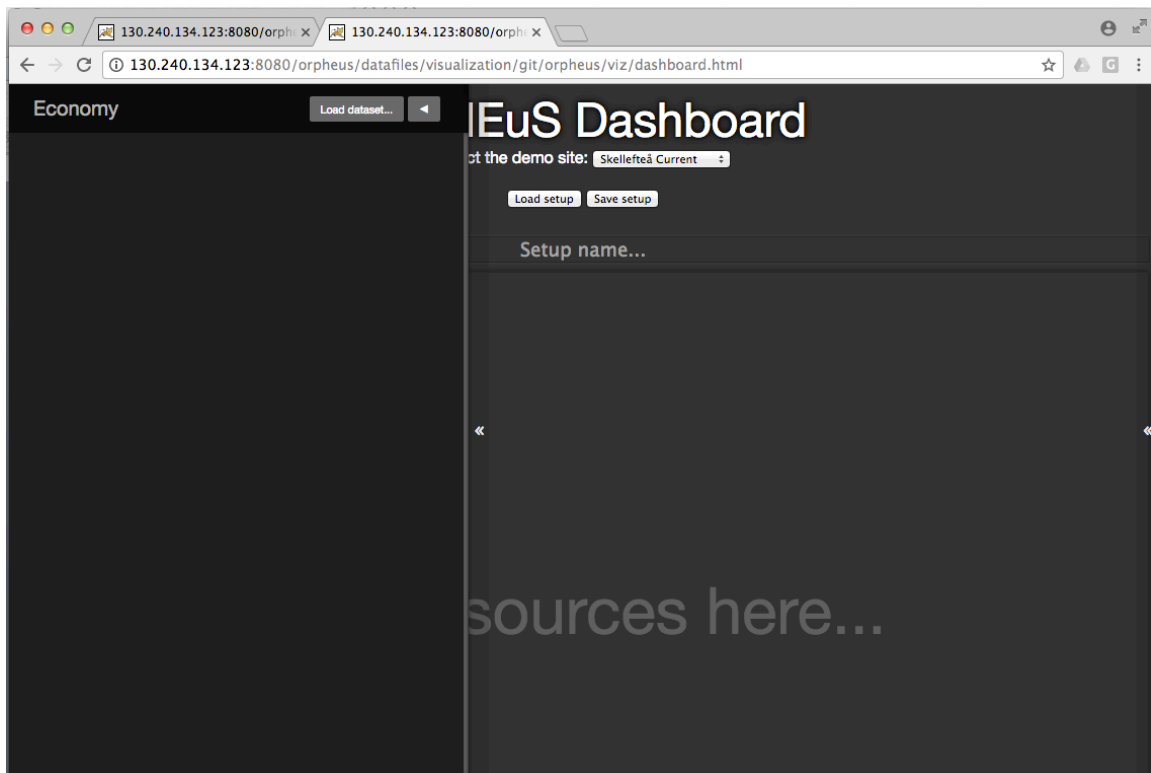


Figure 10: Economy panel is used to load economy datasets for each selected scenario.

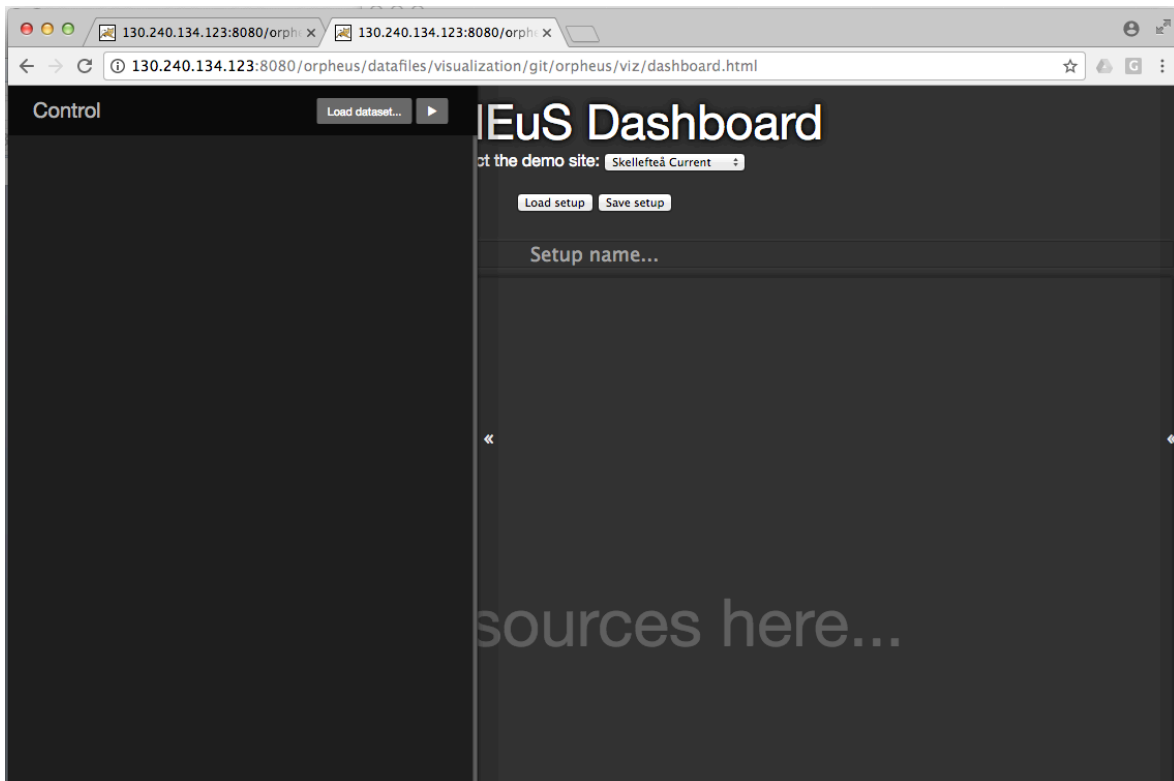


Figure 11: Control panel is used to load control datasets for each selected scenario.

Figure 12 and 13 show the Load dataset buttons and the switch panel buttons next to it on the right. These are used to load different parameters for each scenario within the economy and control simulation datasets as further shown in figure 14 and 15. We demonstrate this for the Skellefteå Current scenario but the operation remains the same for all different scenarios. After clicking the load dataset button in any of the two panels economy or control the user will see the dataset load and a panel with dropdown selections to select the parameters of choice as can be seen in figure 14. There is also a red 'X' button to close the panel and move out of the selection panel.



Figure 12: Load dataset button on the economy panel and next to it on the right is Switch panel button to switch to the control panel.



Figure 13: Load dataset button on the control panel and next to it on the right is the Switch panel button to switch to the economy panel.

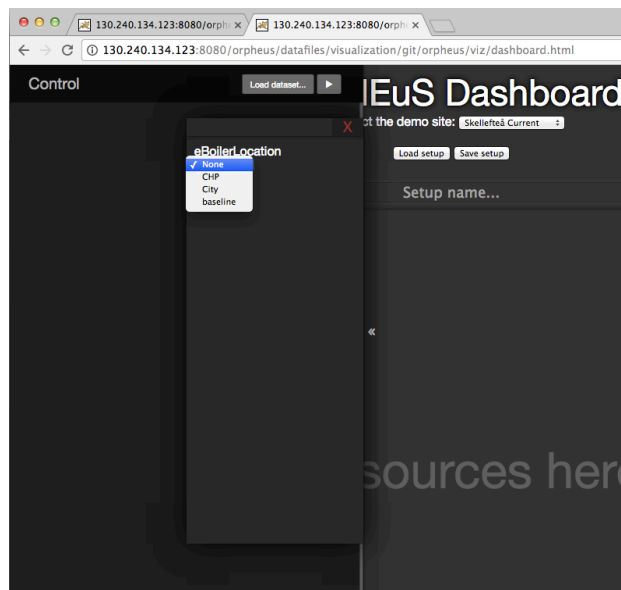


Figure 14: Panel showing different parameters to be selected for the scenario to load the dataset files.



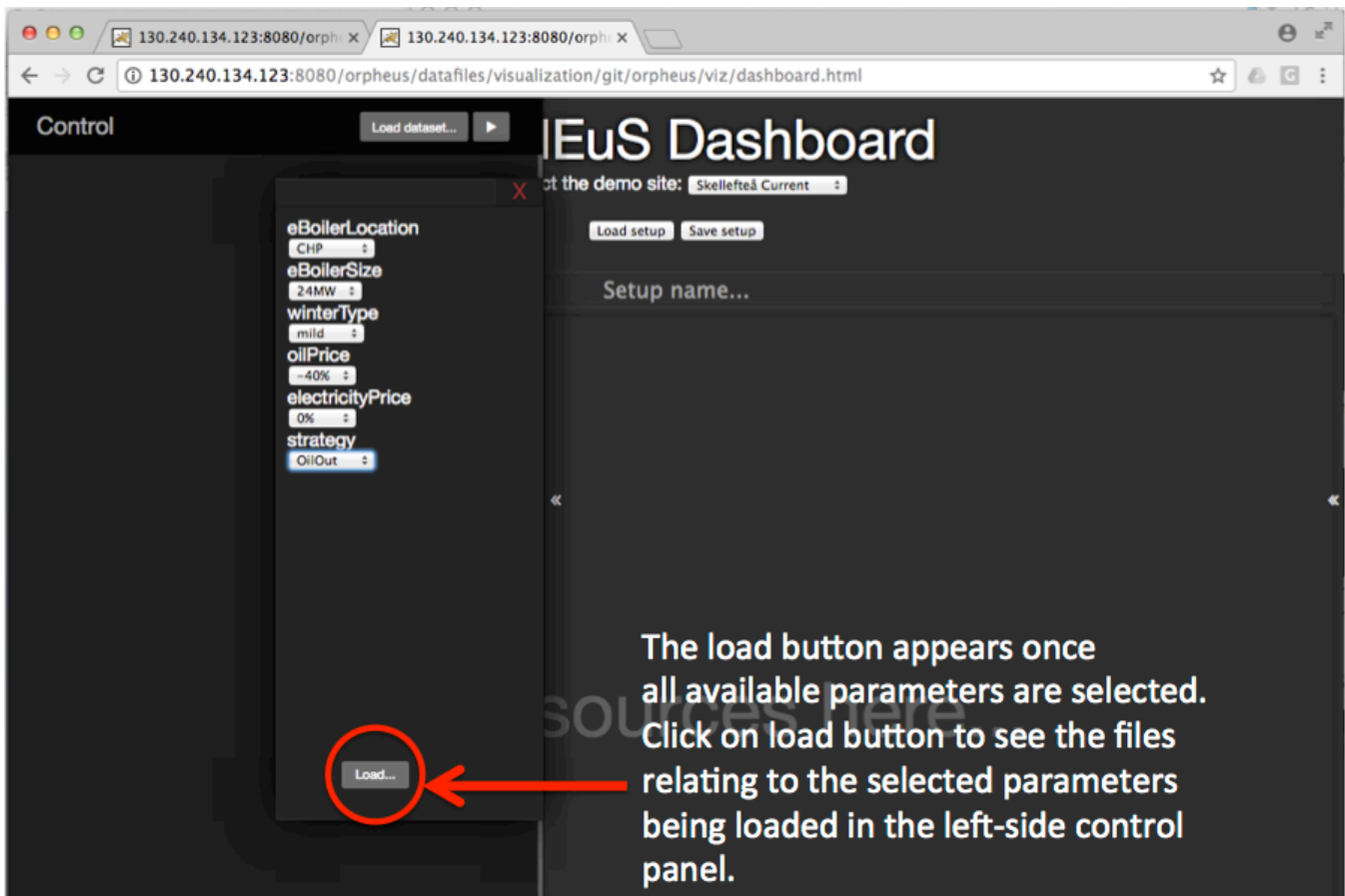


Figure 15: Load button after all available parameters are selected appears. Clicking on this load button will load all the corresponding data files in the left control panel.

Switch to the Economy panel and perform the same steps to select and load the economy parameters and then click on the load button to load the economy data files in the economy panel on the left. Please be patient and wait for all the results to load. The time to load depends on how big the data files are and in some scenarios the wait time may be longer than others depending on file sizes.

Once the files are loaded in the left panel the user will see the entire list in alphabetical order as shown in figure 16. The user can load multiple sets of such files for different parameter selections as shown in figure 17. The top line shows the list of parameter selection and below it all the files are listed. The user can collapse each set of files by clicking on the topmost row with different parameter names as shown in figure 18 where one set of files is collapsed and one is open. Hovering the mouse over the topmost row of each set of files also shows a popup with the associated parameter selection as shown in figure 18.

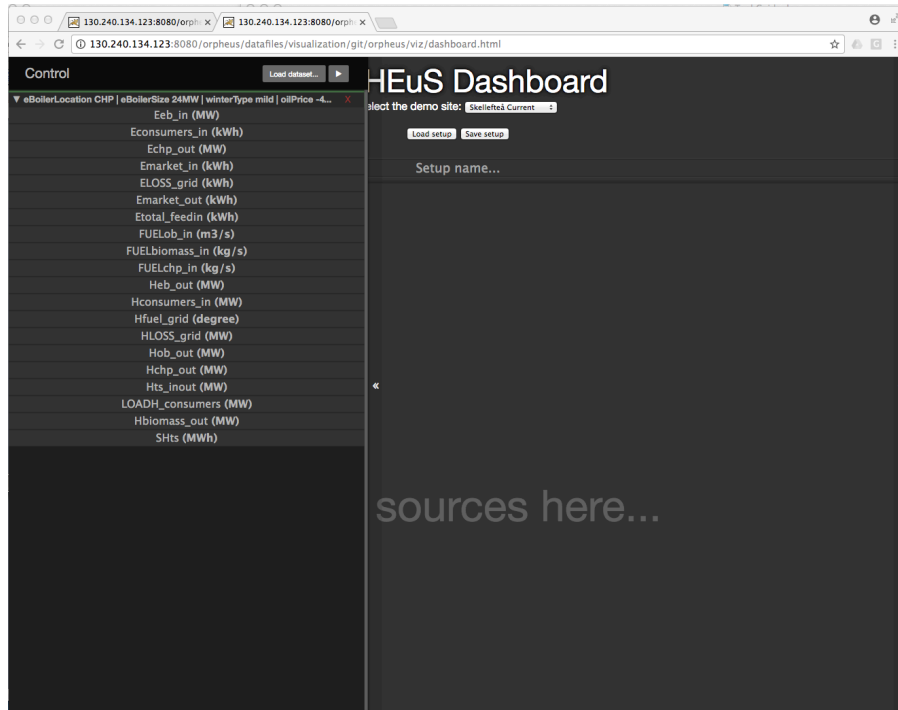


Figure 16: Panel showing one set of files with the selected parameter at the top of the list of files.

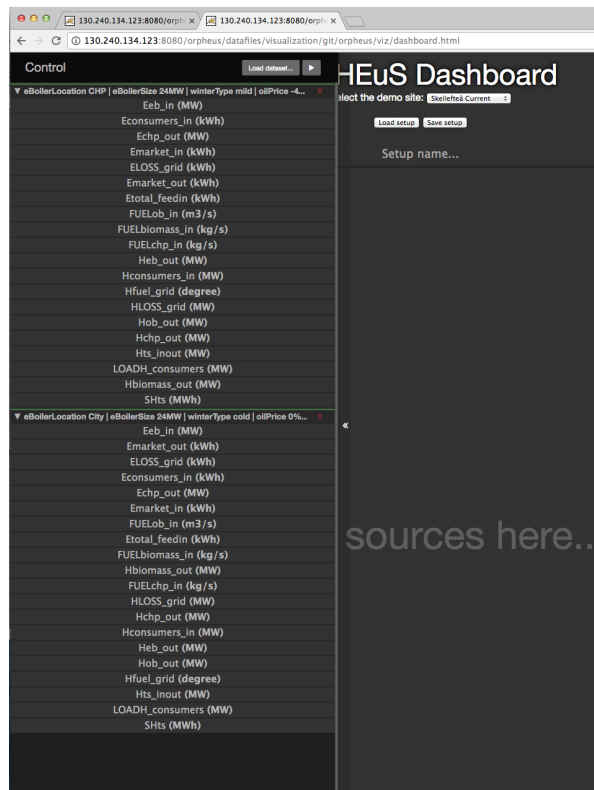


Figure 17: Panel showing multiple set of files with the selected parameter at the top of each list of files.

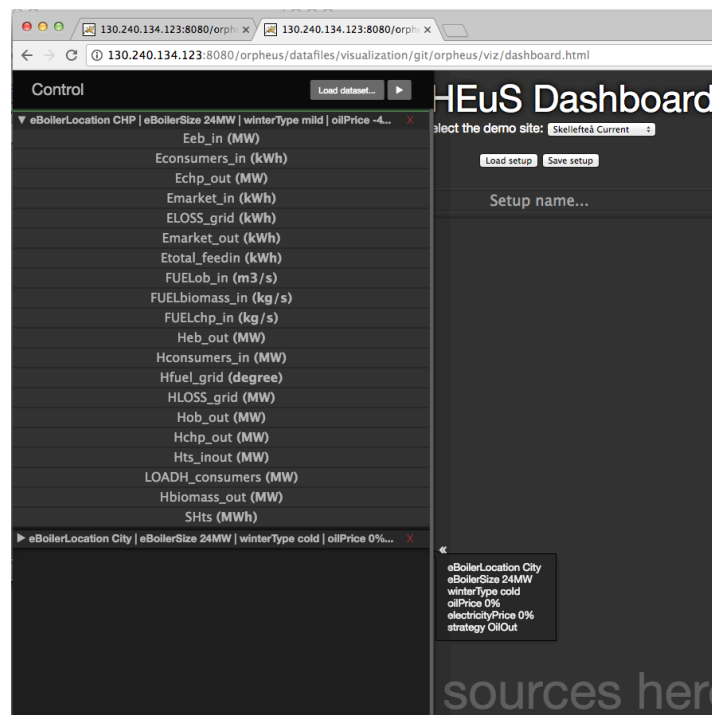


Figure 18: Panel showing one open set of files and one collapsed set of files. Hovering on the top row of each set shows a popup with the associated parameter selection.

The user can drag and drop each file into the dashboard where it says “Drop sources here” to view the individual files as shown in figures 19, 20 and 21. Figure 21 also shows that files with the same data units can be combined together by dropping one file on top of another preloaded graph. Each graphical tile can be named according to the user needs. There is a legend showing the name of the graph line and the x and y axis. Each file can be zoomed in to see a larger view by clicking on the lens icon on the top right of each graphical tile as shown in figure 22 and 23. The ‘X’ can be clicked to close a particular graphical tile. At the bottom of each graphical tile are sliders to move through the data points in time and view them at any particular time step. There are two radio buttons on the bottom left of each graph tile to link multiple tiles together when traversing through them in time to see all parameters together in different graphical tiles at the same point in time. It is to be noted that files with different units cannot be combined together in one graphical tile. Therefore, the radio buttons are provided to enable the user to link them together while traversing to see data points within each graphical tile at one point of time. The user can hover over a graph line to view the data point value at that specific time as shown in figure 22 and 23.

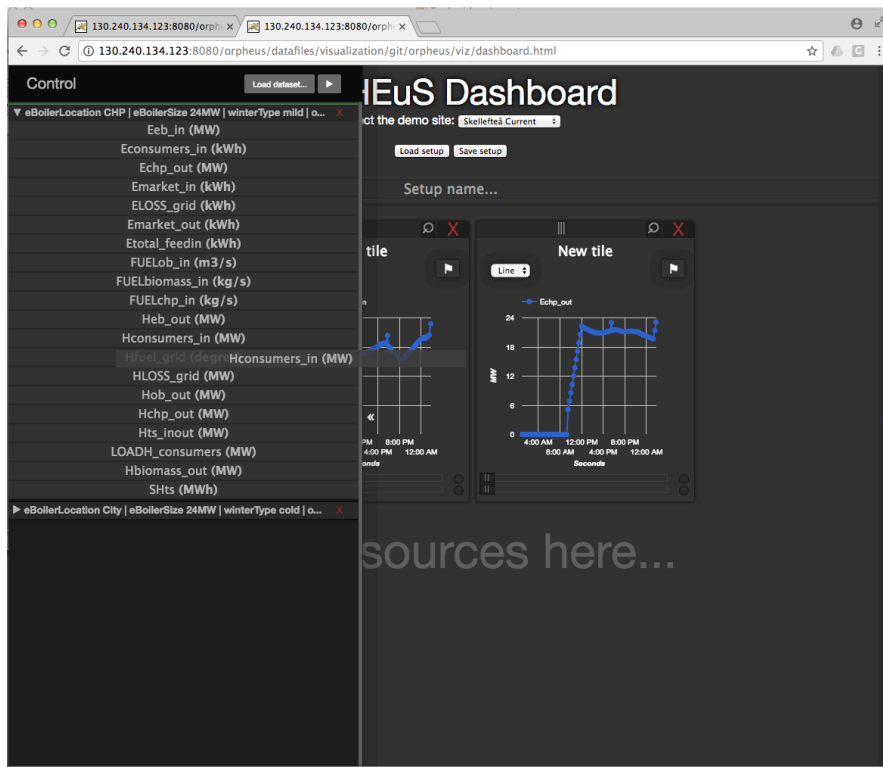


Figure 19: Drag files from left panel to view them in the dashboard, for example Hconsumers\_in is being dragged in this figure.

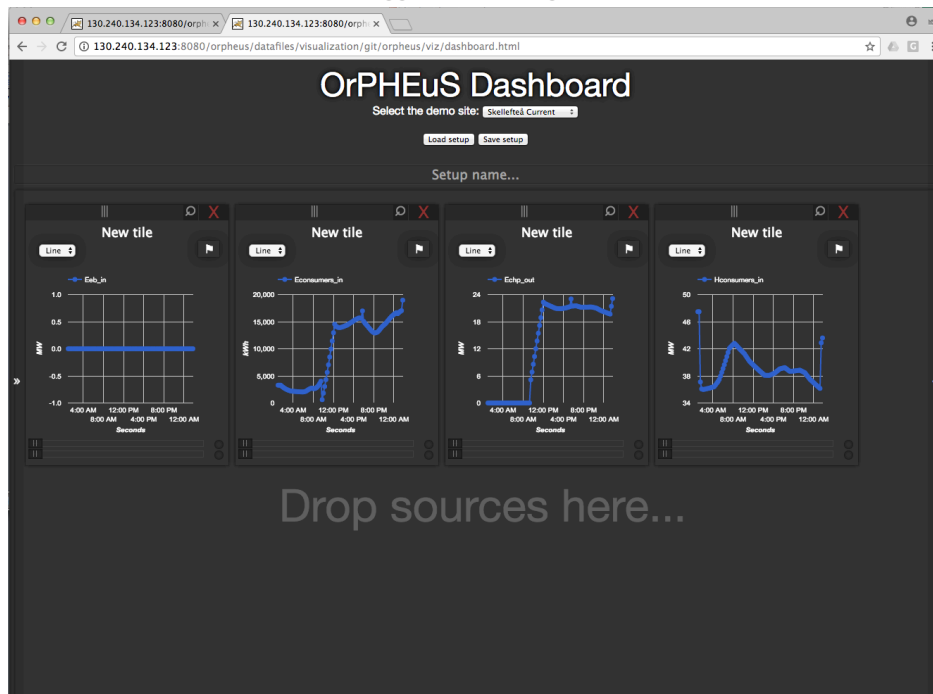


Figure 20: The file Hconsumers\_in can be viewed in the dashboard here along with multiple other files.

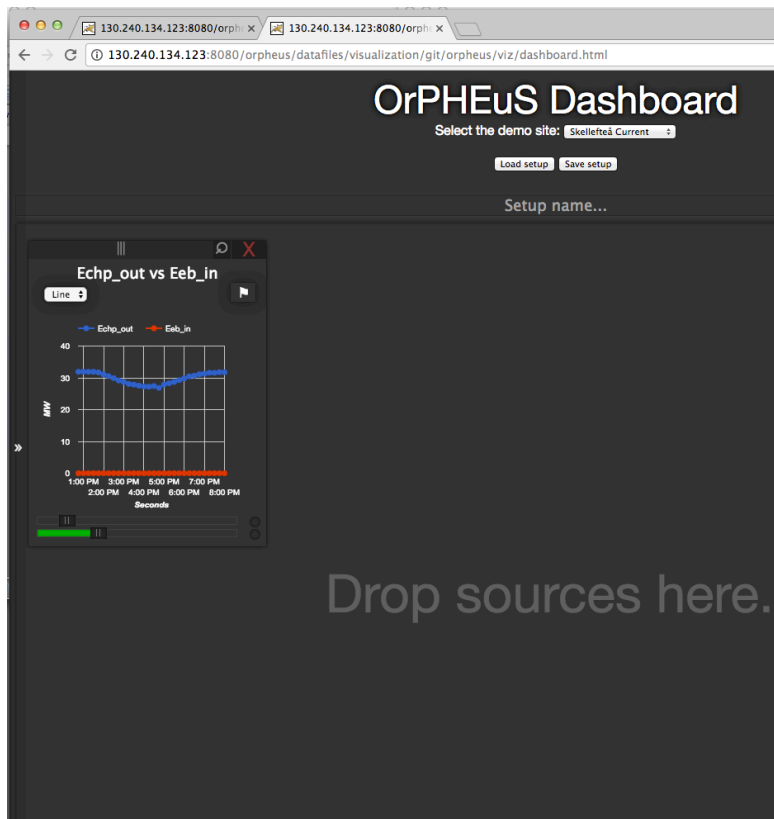


Figure 21: Two or more files with same units can be loaded in one graphical tile and renamed accordingly.

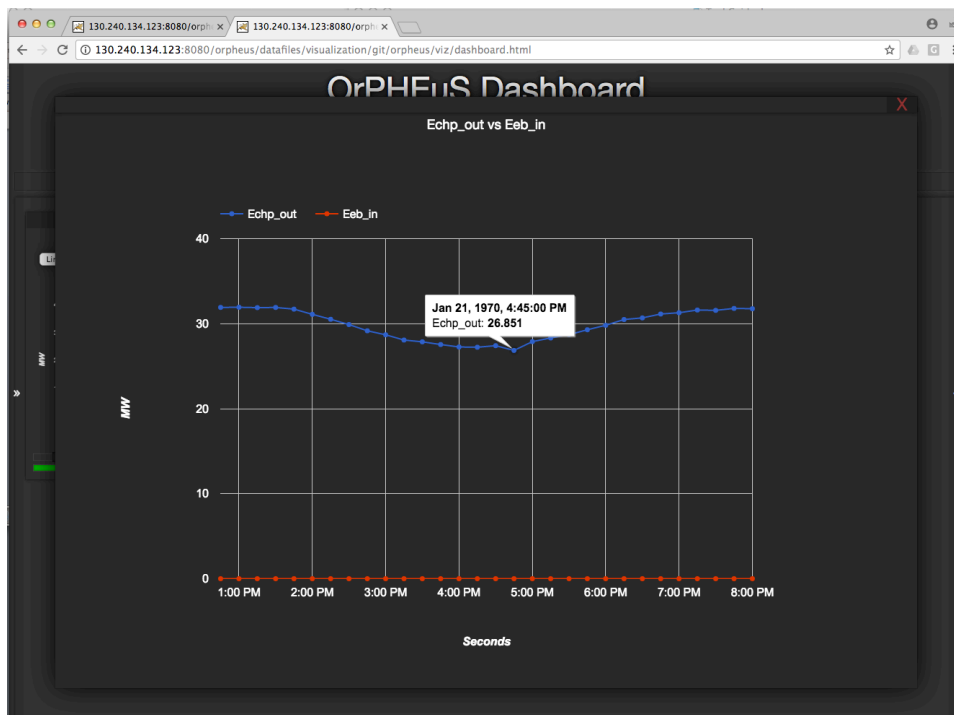


Figure 22: Zoomed in view of one graphical tile with two data files.

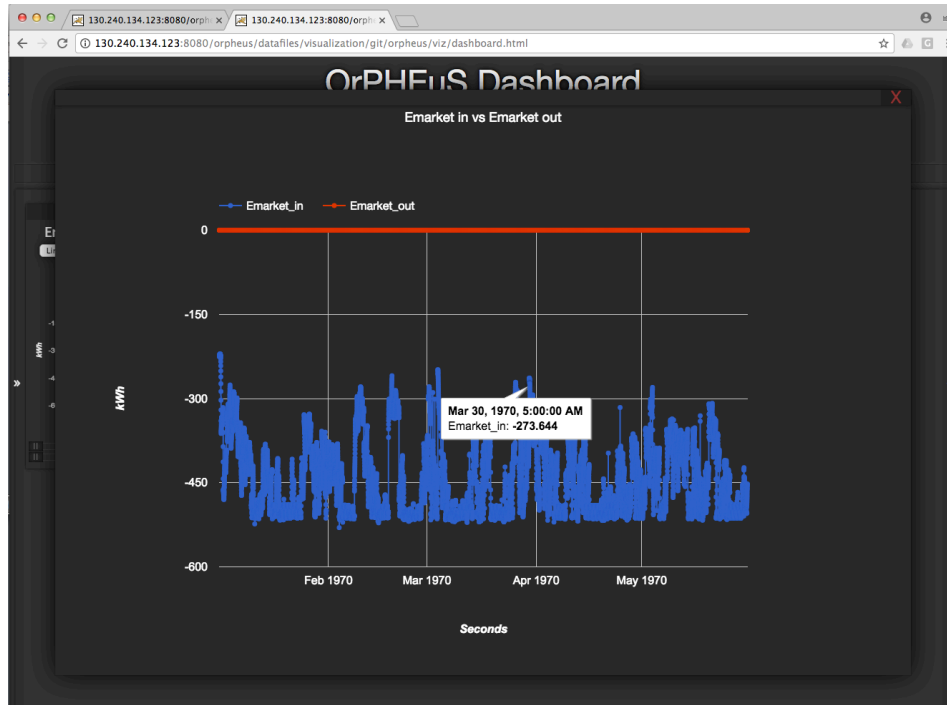


Figure 23: Another example of zoomed in view of one graphical tile with two data files.

After reading this guide the user should have basic knowledge of operating the Orpheus tool and navigating through the different scenarios and datasets for the desired results they like to view from the simulation results datasets. Please contact us if you need further assistance or information regarding the tool and its operation.