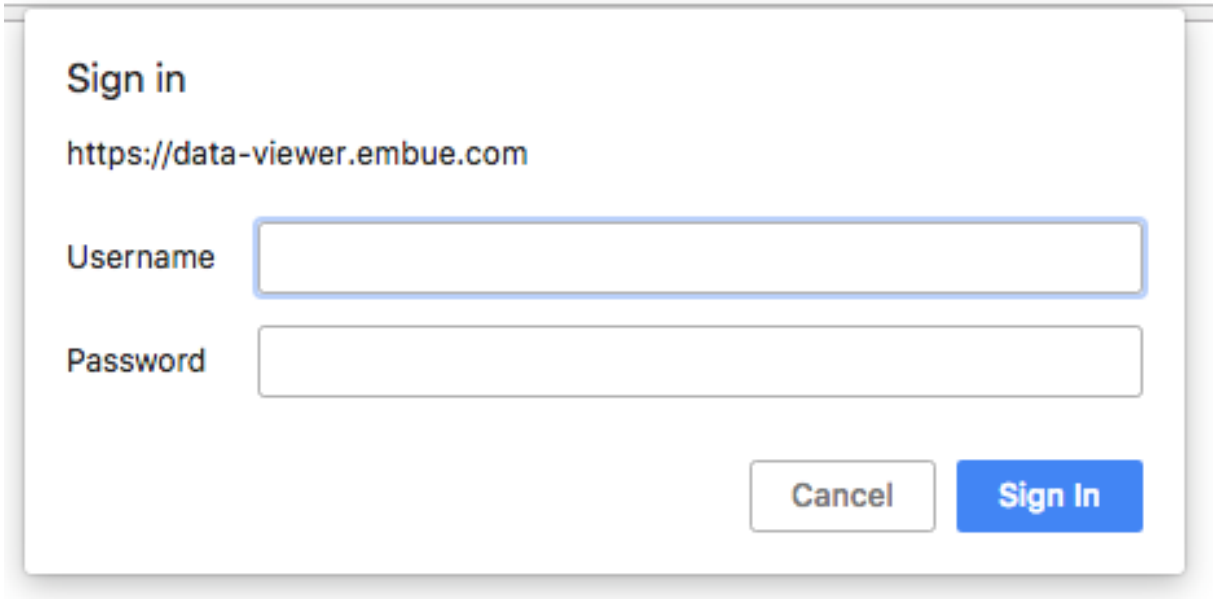
Data Analysis Tool Overview

This tool allows building owners and managers to view recent set-points, temperature, humidity, and thermostat activity across all apartments. This helps to identify anomalous behavior, and recognize potential problems.

Login and Logout

Navigate to data.viewer.embue.com and log in:

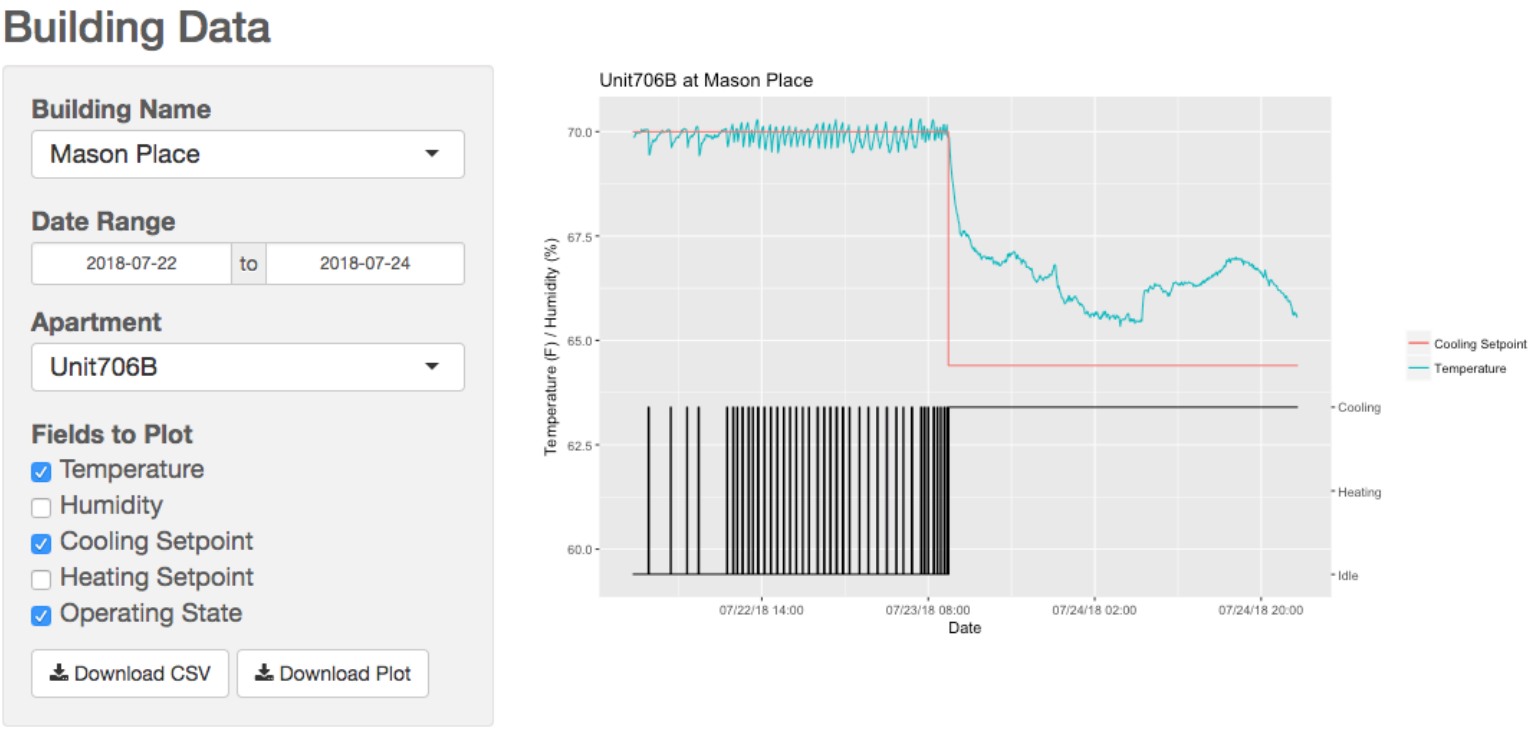


Logging in and rendering data may take 15-30 seconds. To log out, quit your browser.

Summary of Tabs

- Home: graphs for individual apartment units
- Current State Graphs: graphs that include information about all apartment units in a certain building. Helps identify anomalous behavior
- Current State Table: table of apartments that have either been operating for a long period of time, or have been off for a long period of time
- Load Data: Connect to onsite Embue equipment to load the most recent data

“Home” Tab



Select a date range and apartment, and plot various fields for that apartment.

The “Operating State” field can take one of four possible values:

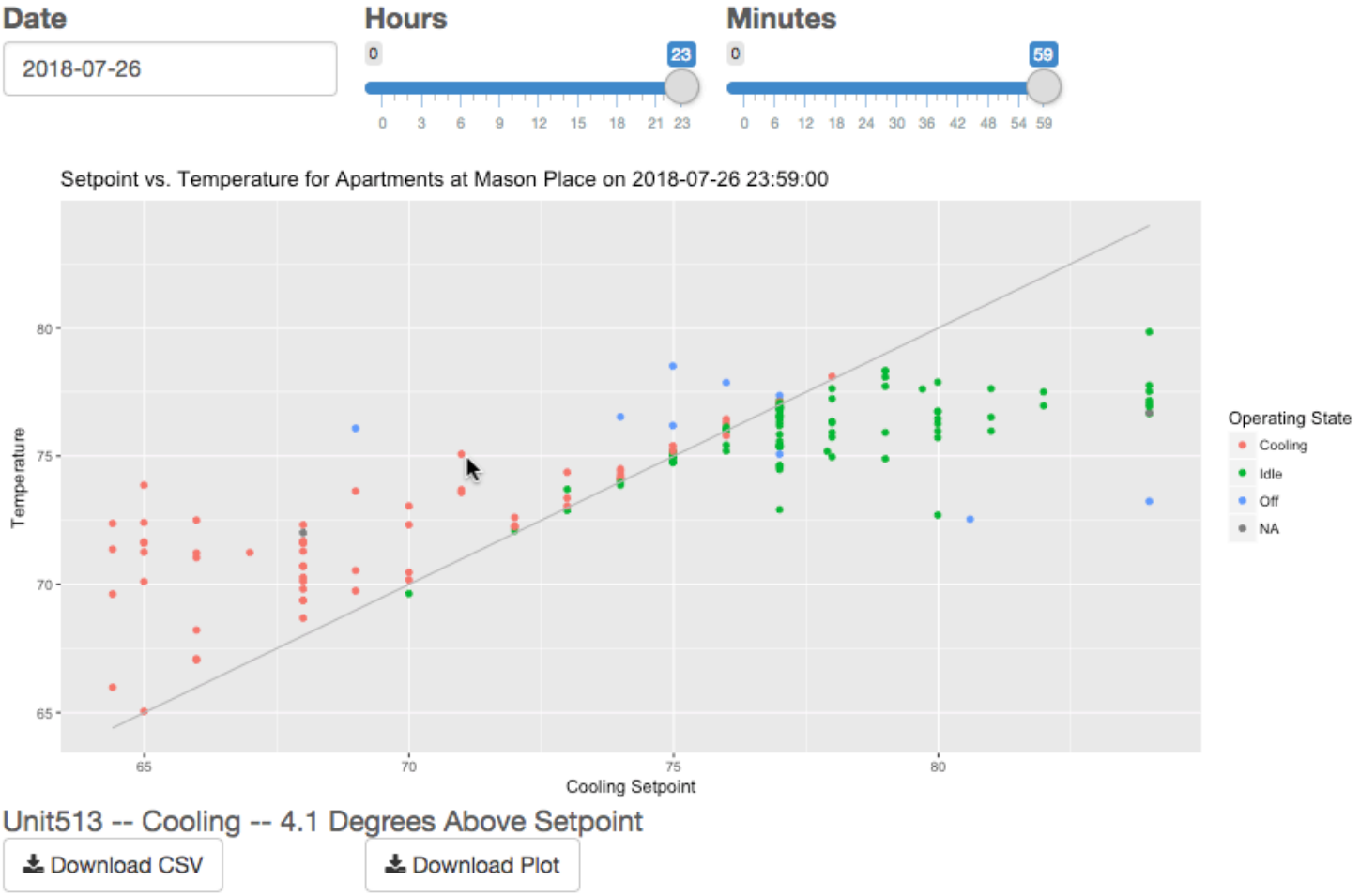
- “Cooling” - the thermostat is currently cooling the apartment
- “Heating” - the thermostat is currently heating the apartment
- “Idle” - the thermostat is on, but not currently calling for cooling or heating
- “Off” - the thermostat is off, and will not call for cooling or heating even if the set point is not met

The “Download CSV” button provides all the data for all apartments in the selected date range. This feature is for advanced users who want to perform their own data analysis.

“Current State Graphs” Tab

Set the “Building Mode” selector at the top of the page to indicate whether the building is currently in heating or cooling mode. This will apply to both graphs below.

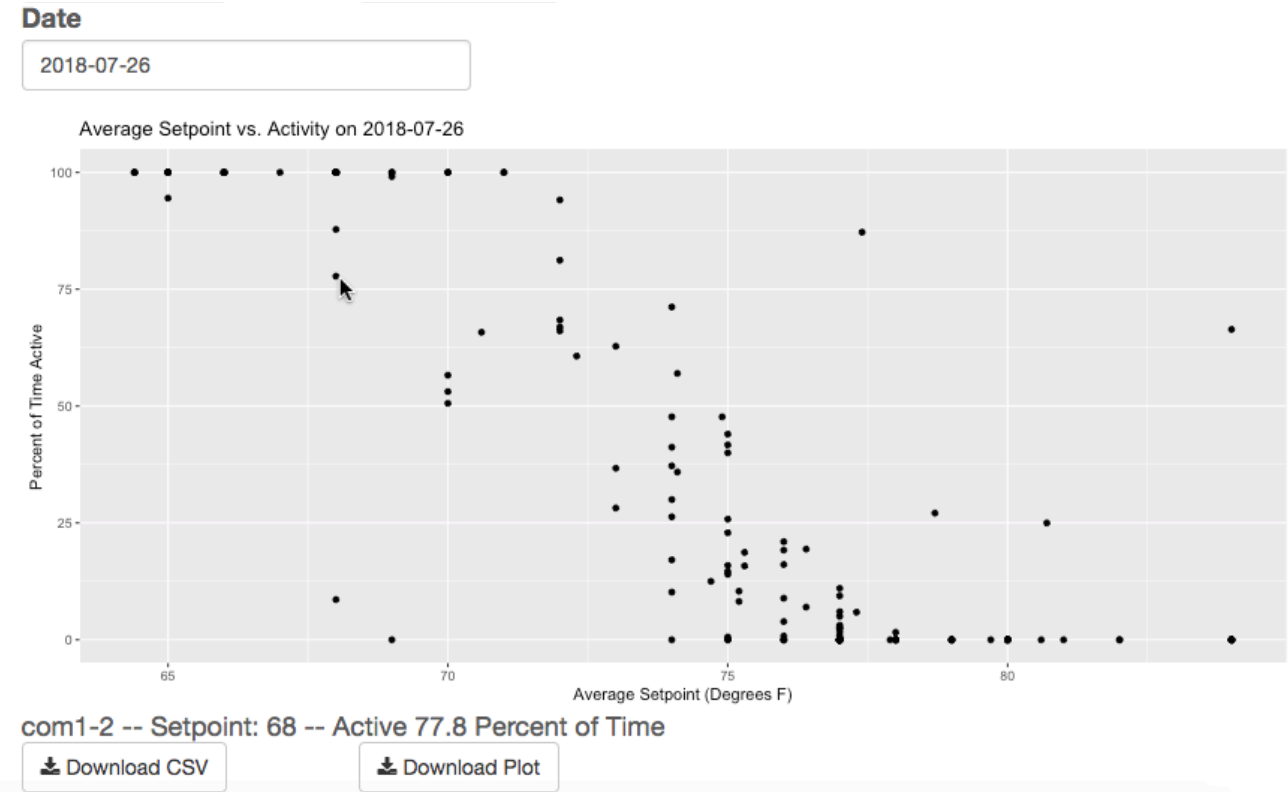
First Graph - Setpoint vs. Temperature



- The color identifies the state that the apartment is in.
- The “Date”, “Hours”, and “Minutes” selectors allow the user to look at snapshots from different points in time

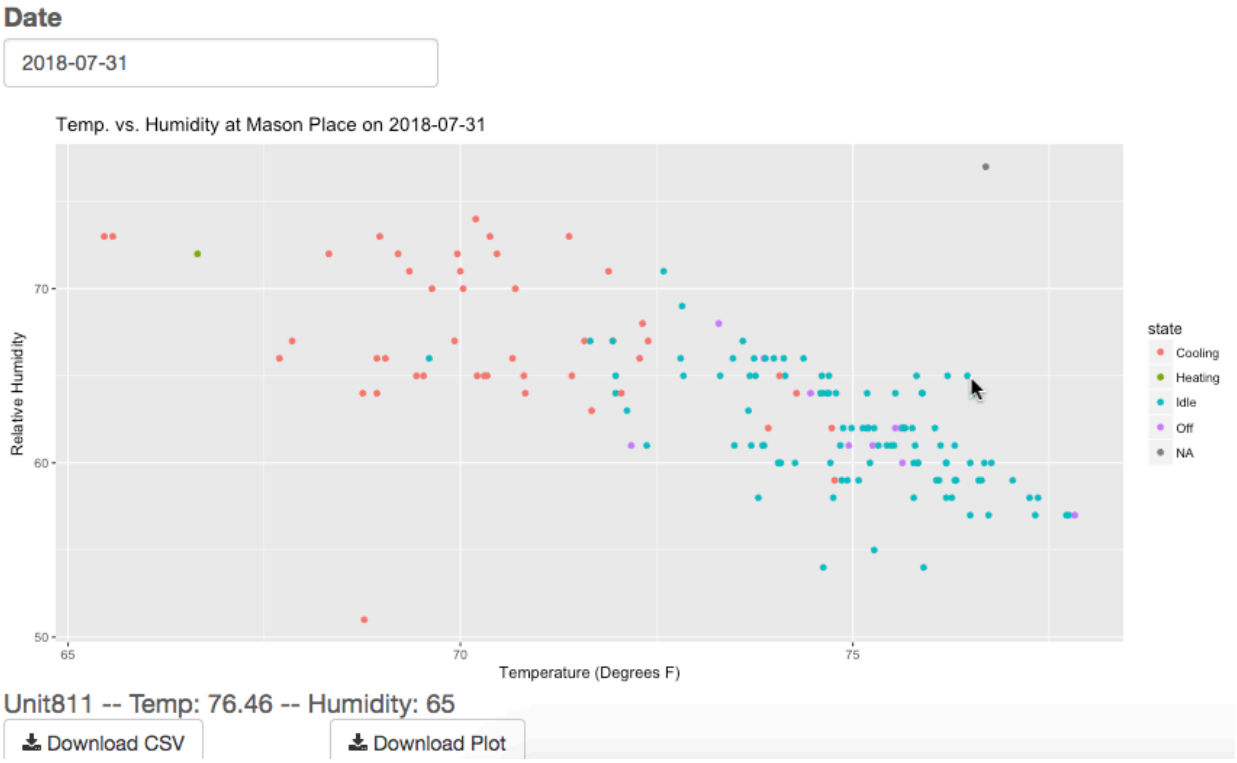
- The diagonal line indicates where set-point equals temperature. Apartments above this line are above their set-point, and apartments below the line are below set-point. When the building is in cooling mode, apartments above this line should be in cooling state. In heating mode, apartments below the line should be in heating state.
- Hovering on a point displays additional information about that apartment. Clicking a point goes to the "Home" tab, showing a graph of recent activity for that apartment

Second Graph - Setpoint vs. Activity



- When the building is in cooling mode, apartments with a lower set-point should show more activity. When the building is in heating mode, apartments with higher set-point should show more activity. The chart shows under or over-active apartments
- Change the "Date" selector to look at average set-point vs. activity on different days
- As in the first graph, hovering displays extra information, and clicking shows a graph

Third Graph - Temperature v. Relative Humidity



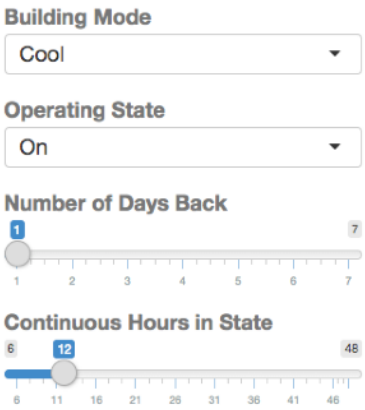
Shows temperature and relative humidity across all apartments at a moment in time on the selected date. This allows the user to detect outliers.

As before, hovering displays additional information, and clicking goes to an apartment's graph in the "Home" tab.

“Current State Table” Tab

This tab can display:

- A table of apartments that have been continuously on for a long period of time
- A table of apartments that have been continuously off for a long period of time



- Update the “Building Mode” selector to indicate whether the apartment is in cooling or heating mode
- For the “Operating State” selector, choosing “On” will display apartments that have been on for a long period of time. Choosing “Off” will display apartments that have been off for a long period of time
- The “Number of Days Back” selector specifies the date range to scan for anomalous activity. The end of the date range is always the most recently imported data
- The “Continuous Hours in State” selector specifies the threshold for anomalous activity. For example, a value of 12 will find apartments that have been on or off (depending on the selected operating state) for 12 hours in a row

Sample output:

Show 10 entries Search:

	Apartment	Avg Degrees From Setpt	Avg Setpt
1	com-bsmt	3.3	66
2	com1-1	1.3	68
3	com1-3	1.8	68
4	com1-4	2.2	68
5	com2-5	1.2	68
6	com2-7	3.8	68
7	com4-9	3.3	68
8	com6-11	6.6	65
9	com7-12	5.4	66
10	com8-13	4	68

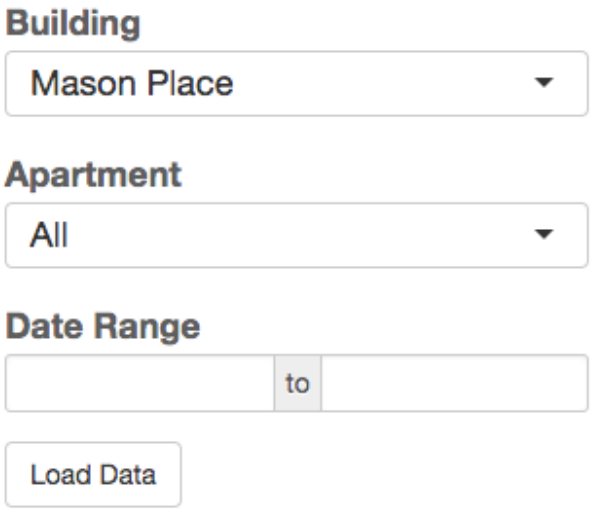
Showing 1 to 10 of 33 entries Previous 1 2 3 4 Next

The output will be sorted by apartment. It also shows:

- Average set-point of the apartment over the specified period of time
- Average degrees from set-point in the specified period of time. If “Cool” building mode is selected, this field will indicate degrees above set-point. If “Heat” building mode is selected, this field will indicate degrees below set point

Clicking on an apartment will navigate to the “Home” tab and bring up a graph of recent temperature and activity for that apartment.

“Load Data” Tab



Allows the user to pull the most recent data. Select the building, the apartment, and the date range. The user can either select “All” apartments, or select one specific apartment. Loading data can take 30 seconds to 10 minutes, depending on the quantity of data requested.