

Thank you for your interest in the Honda Smart Home US data. Future downloads will be posted to [www.HondaSmartHome.com](http://www.HondaSmartHome.com).

Should you have any questions, please contact [hondasmarthome@hna.honda.com](mailto:hondasmarthome@hna.honda.com)

The datafiles are in .CSV format. Note that the first column of data is the timestamp, and subsequent columns are the measured data at that date and time. The standard timestep is one minute. Missing data is treated in two ways:

1. If the datalogger went down and no channels were logged then the entire row will be missing (i.e. there will be discontinuous timesteps).
2. If the datalogger was working correctly but a specific sensor malfunctioned, then only the data for that sensor will be missing and it will appear as a blank. In Excel this will appear as a blank cell.

**Datafile Example:**

	A	B	C	D	E
1	Timestamp	TAO (degF)	RHO (%)	WS (mph)	WD (deg)
2	4/1/2015 0:00	51.8	39	3.1	261
3	4/1/2015 0:01	51.8	39.1	3.2	262
4	4/1/2015 0:02	51.8	38.9		261
5	4/1/2015 0:03	51.8	38.9	3	243
6	4/1/2015 0:04	51.6	39	2.7	245

missing data will show as blank

Note that this first data set has very limited data regarding the heat pump performance. Erratic system behavior has rendered the minute-by-minute data unuseable. However, the data regarding the heat transfer into the earth has been included for study. Complete HVAC data will be included in the next data set.

The channel names in the .CSV file are shorthand (for example, "TAO" stands for "Temperature, Air, Outdoor"). **The long version of the names is shown in the included file "Channel\_Parsing.xlsm."**

The Channel\_Parsing utility can also allow you permanently delete unwanted data columns in order to reduce file size. To use the utility, just place a lower case "x" next to any channel that you want to delete, then click the button. It will allow you to browse for a file, confirm that the channels are in the correct order, and then delete columns in that datafile corresponding to those marked for deletion in the utility.

**\*\*NOTE: If you use this utility to delete channels then the included Viewer File will NOT WORK. \*\***

**Channel\_Parsing.xlsm:**

	A	B	C
1			
2			
3			
4			
5	<b>Channel</b>	<b>Description</b>	<b>DELETE?</b>
6	Timestamp	Date and Time	
7	TAO (degF)	Temp, air, outdoor	
8	RHO (%)	RH, air, outdoor	
9	WS (mph)	Wind Speed	
10	WD (deg)	Wind Direction	
11	RAIN (mm)	Rainfall	

Mark Channels with "x" then  
Click to Open File and DELETE

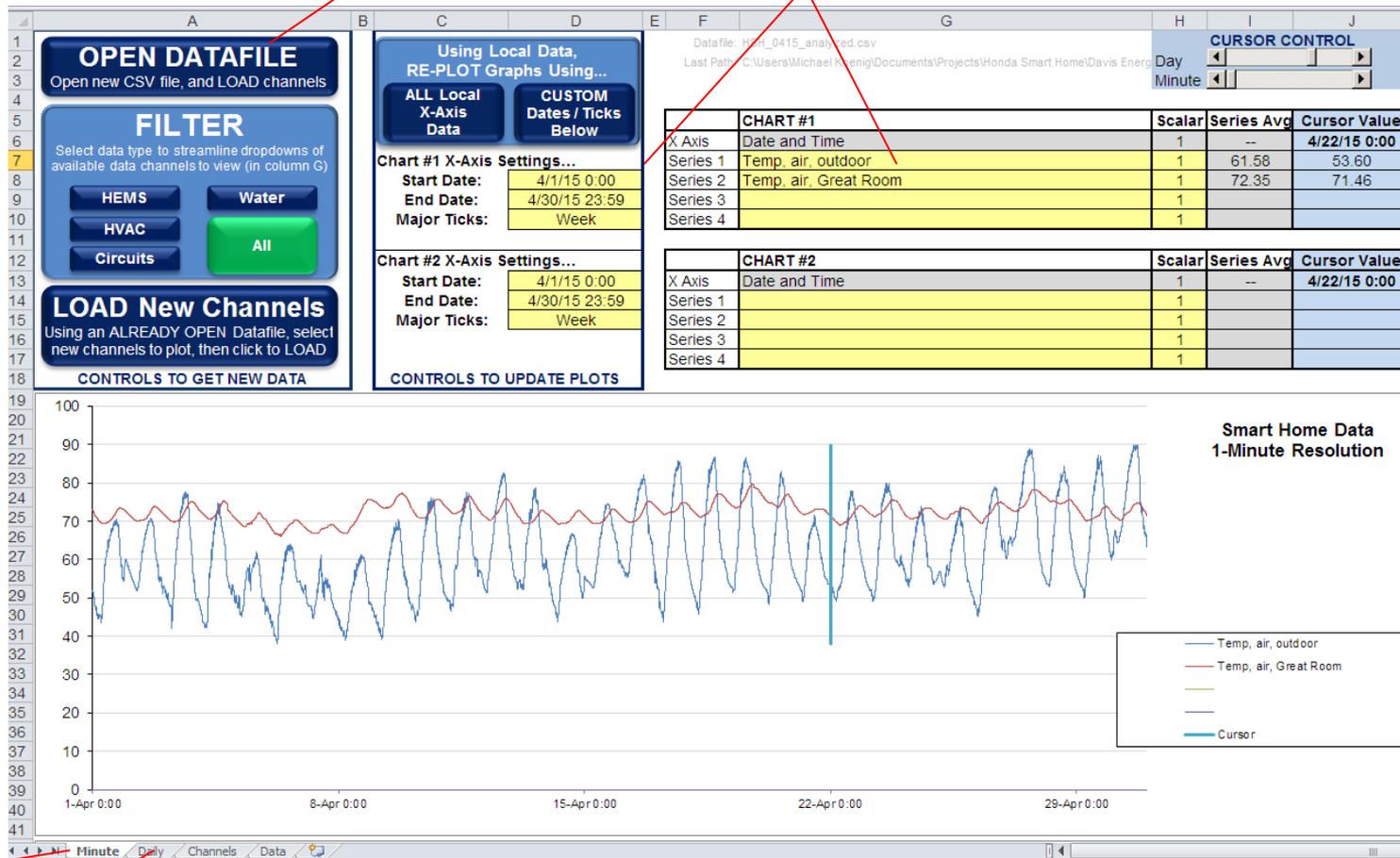
Also included is a Beta Excel utility “Data\_Viewer.xlsm” that allows you to easily plot and perform simple sums/averages on the data.

**Instructions for using the Data\_Viewer utility:**

1. OVERVIEW:

Action buttons (macros) are dark blue

Yellow boxes are areas for the user to select... On this sheet, either graph dates or which channels to plot.



The “Minute” tab allows you to view up to four channels per graph at 1-minute resolution.

The “Daily” tab performs a Sum, Average, or kWh-Sum function on each channel.

On the “Channels” tab, you can select which channels to Group together, and whether to Sum or Average, or kWh-Sum on the “Daily” tab.

The “Data” tab stores up to eight channels in the viewer workbook.

**Instructions for using the Data\_Viewer utility (continued):**

**2. USING THE MINUTE RESOLUTION VIEW**

C. Open a file to view (this will also load the selected channels from that file). This process takes a long time with large datafiles.

A. Select the data channels to plot by picking from the dropdown lists. Selecting a Filter button will filter the available choices, or if you Filter by "All" then every channel is available to select. Filtering is only a matter of convenience to reduce the amount of scrolling to select. (You can adjust filters on the Channels tab.)  
Note: There are two plots available , second plot is below the first.  
You can also apply a scalar multiplier to the data

B. Change the filter type if needed

D. With the datafile still open, you can add or delete channels to plot, then click to load these new channels if you'd like

E. The displayed channels are stored locally. Even after closing the datafile you can manipulate the X-axis display... Just make the changes and then click one of the Update buttons.

F. A rudimentary cursor is available. Slide the controls to select the day, then the minute of the day. The value for each channel appears in the blue cells.

The screenshot shows the Data Viewer utility interface with several control panels and a data plot. The interface is organized into columns A through J. Column A contains the 'OPEN DATAFILE' and 'FILTER' panels. Column B contains the 'LOAD New Channels' panel. Column C contains the 'Using Local Data, RE-PLOT Graphs Using...' panel with 'ALL Local X-Axis Data' and 'CUSTOM Dates / Ticks Below' options. Column D contains 'Chart #1 X-Axis Settings...' and 'Chart #2 X-Axis Settings...' panels. Column E contains the 'CURSOR CONTROL' panel with 'Day' and 'Minute' dropdowns. Column F contains two data tables for 'CHART #1' and 'CHART #2'. Column G contains the main data plot area. Column H contains the legend for the plot. Column I contains the status bar with 'Minute', 'Daily', 'Channels', and 'Data' tabs. Column J contains the status bar with navigation icons.

	Scalar	Series Avg	Cursor Value
X Axis	1	--	4/22/15 0:00
Series 1	1	61.58	53.60
Series 2	1	72.35	71.46
Series 3	1		
Series 4	1		

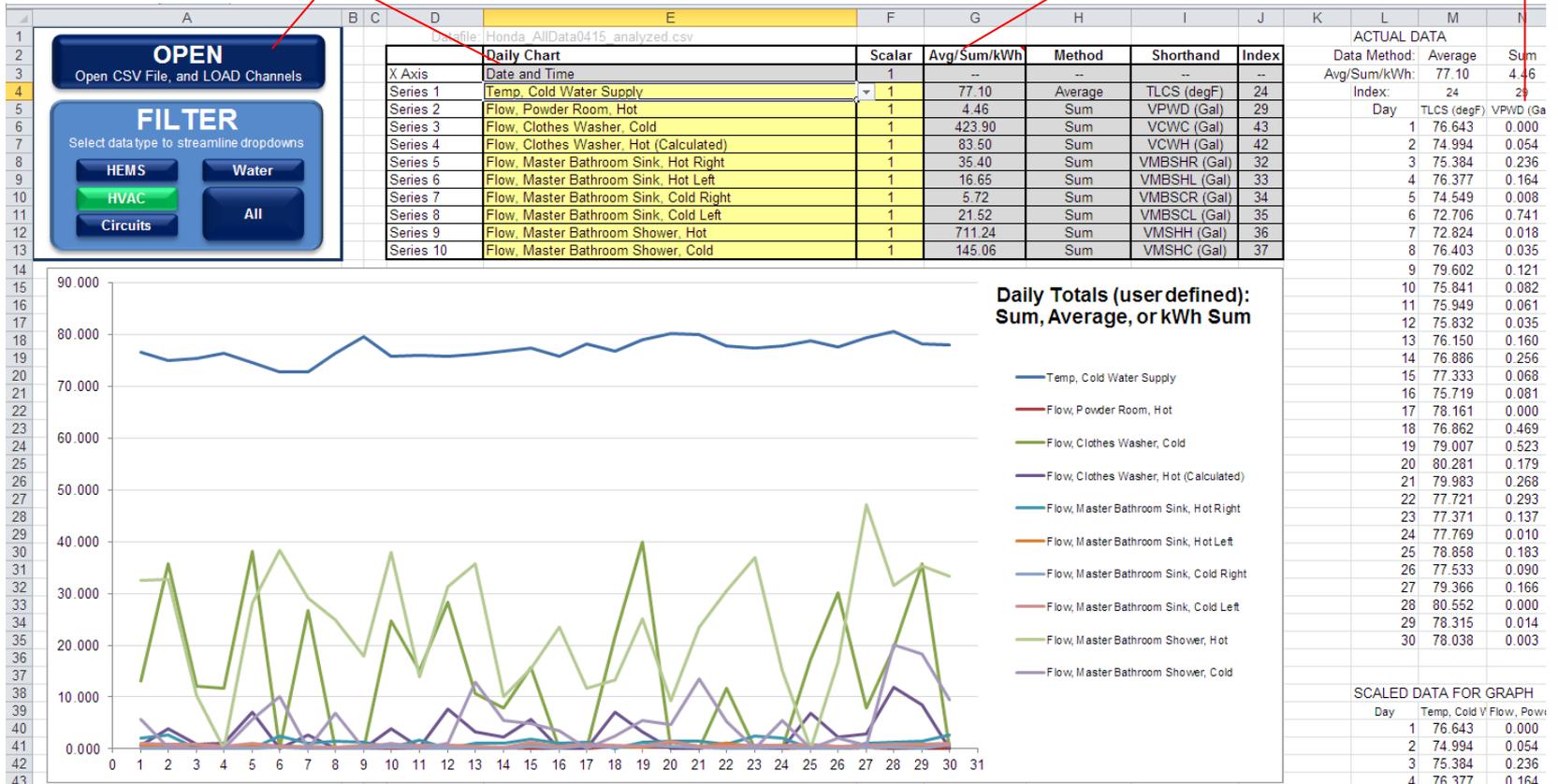
	Scalar	Series Avg	Cursor Value
X Axis	1	--	4/22/15 0:00
Series 1	1		
Series 2	1		
Series 3	1		
Series 4	1		

**Instructions for using the Data\_Viewer utility (continued):**

**3. USING THE DAILY RESOLUTION VIEW**

A. Unlike the Minute-Resolution data which only stores the channels currently displayed, ALL channels for the datafile are summarized and stored locally at the Daily resolution.  
 → If you want to open a new datafile and summarize that data, you can do that in the same way as the Minute resolution controls. Likewise, the Filtering and channel selection process is also the same.  
 But there is no need to load channels from the datafile... At the daily resolution the data will dynamically update as new channels are selected.

B. The gray cells will display the total monthly Average, Sum, or kWh-Sum for each channel (the average of the entire datafile which is assumed to be a complete month).  
 If you want to view the day by day data, a plot is below, and the raw data is left visible on the right side of the sheet.



**Instructions for using the Data\_Viewer utility (continued):**

3. Adjusting the Filters and Summarizing calculation methods

Five different Filter buttons are available. They are named whatever you type in cells A8~E8 on the "Channels" tab. For example, my filter group called "HVAC" currently includes only the time and Outside Air Temp. But by placing an 'x' in cell B11, the next time I use that filter, the dropdown lists will also include Relative Humidity. Or by changing cell B8, the entire filter name will also be changed.  
→ You can change the Name and Channels associated with all five of the filters

	A	B	C	D	E	F	G	H				
1	Put an "x" in the columns below to create Shortcut Lists. These lists will make the dropdowns easier to navigate on the Graphs page. Not critical but makes life easier. NOTE: You can change the names and groups to suit your needs, these are suggestions.					<b>LIST OF DATA CHANNELS (MAX)</b>						
2									mismatched channels (measured chan only):			
3									213	:total number of channels	-----	number of mismatched channels (calc'd):
4												
5												
6												
7	<b>HEMS</b>	<b>HVAC</b>	<b>Circuits</b>	<b>Water</b>	<b>All</b>	<b>Channel</b>	<b>Description</b>	<b>Sum/Avg/kWh</b>				
9	x	x	x	x	x	Timestamp	Date and Time	--				
10		x			x	TAO (degF)	Temp, air, outdoor	Average				
11					x	RHO (%)	RH, air, outdoor	Average				
12					x	WS (mph)	Wind Speed	Average				
13					x	WD (den)	Wind Direction	Average				

At the Daily resolution, you need to specify how the viewer should treat the data. For example, it does not make much sense to Sum the indoor air temperature for the day, you probably want to Average that channel. The viewer has defaults already set but you can change each channel to one of three choices:

1. Sum: Simple sum of all data recorded on that day
2. Average: Simple average of all data recorded on that day
3. kWh: The sum of energy on that day (kW-minutes) divided by 60 = kWh