Level-2 Charging a Chevrolet Bolt EV

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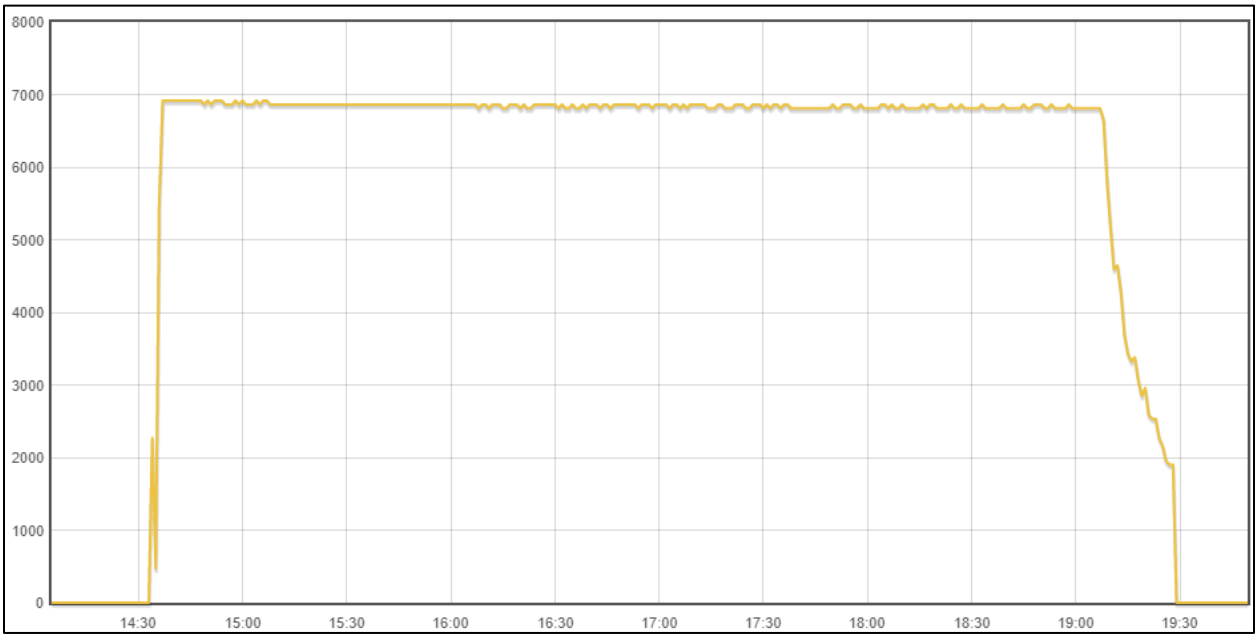
I have an OpenEVSE P50A level-2 charging station in our garage to charge my 2017 Chevrolet Bolt EV (CBEV). When the State of Charge (SOC) gets below 50% I usually set the CBEV timer to charge to 90% by ~6 AM. If I have a long trip planned for the next day I charge it to 100%.

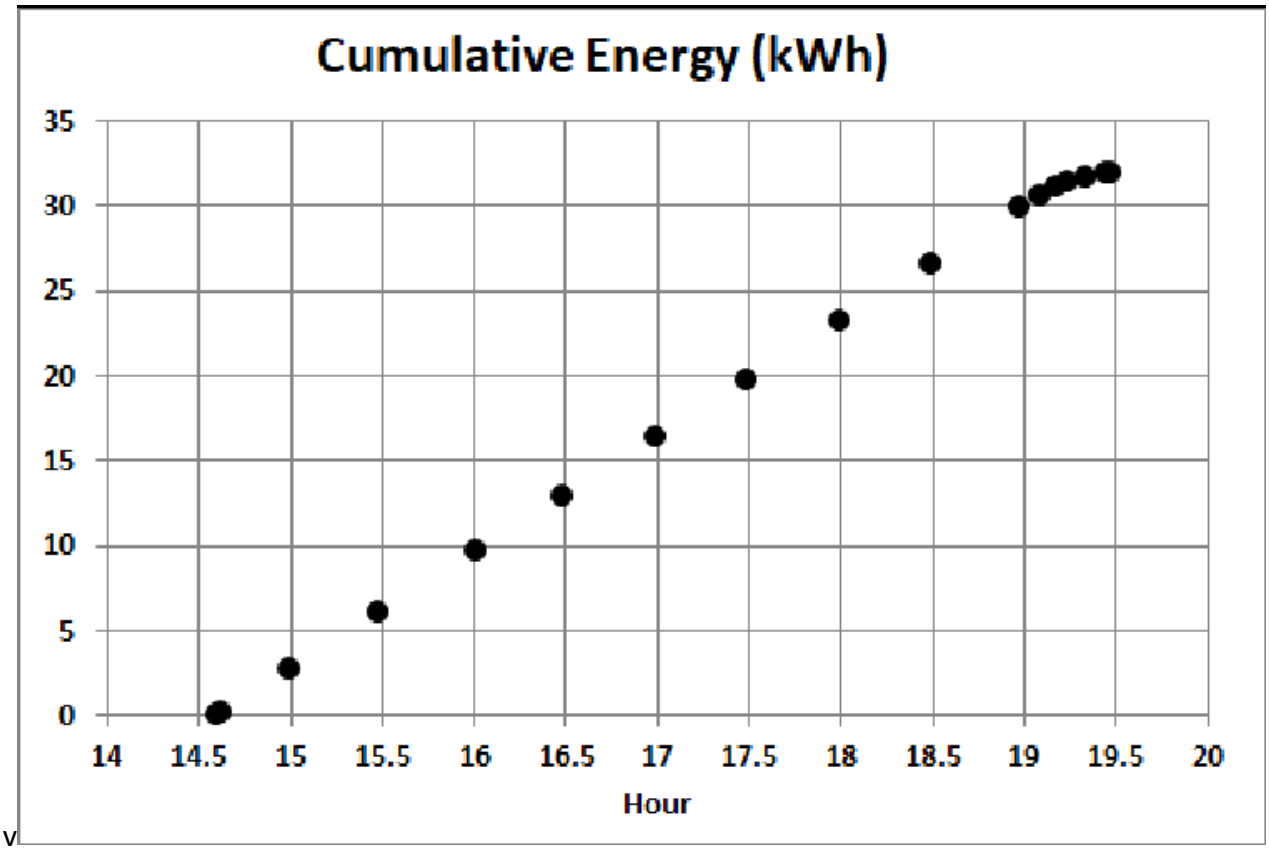
This charging station has a screen that shows the charging current, amount of energy used during the charging session and the accumulative amount of energy since the station was installed. Also, it has WiFi which can be linked to the house WiFi so that charging data can be sent to a server in the cloud, which can be viewed on a local computer.

A typical charging session power curve is:



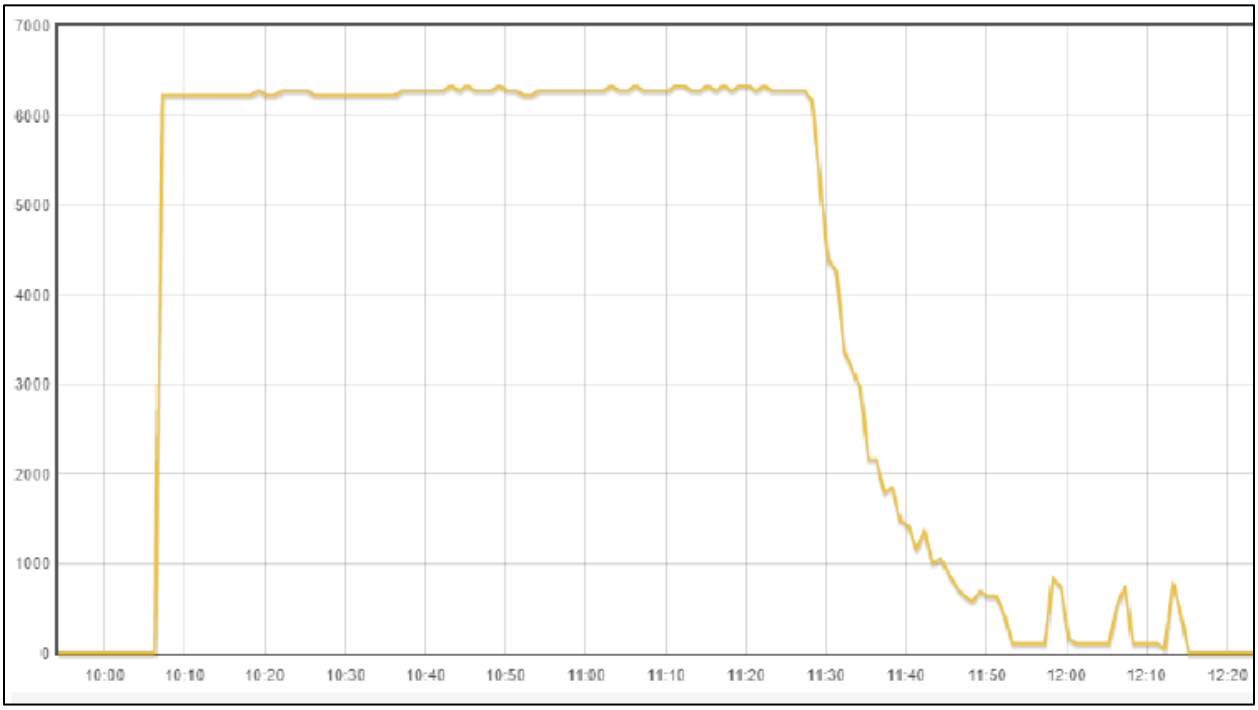
Notice that the level charging power is ~6.8 kW instead of the rated 7.2 kW because of charging losses.

I used the Engauge Digitizer to select points on the curve in order to use an Excel spreadsheet to plot the energy put out by the charging station for this session:



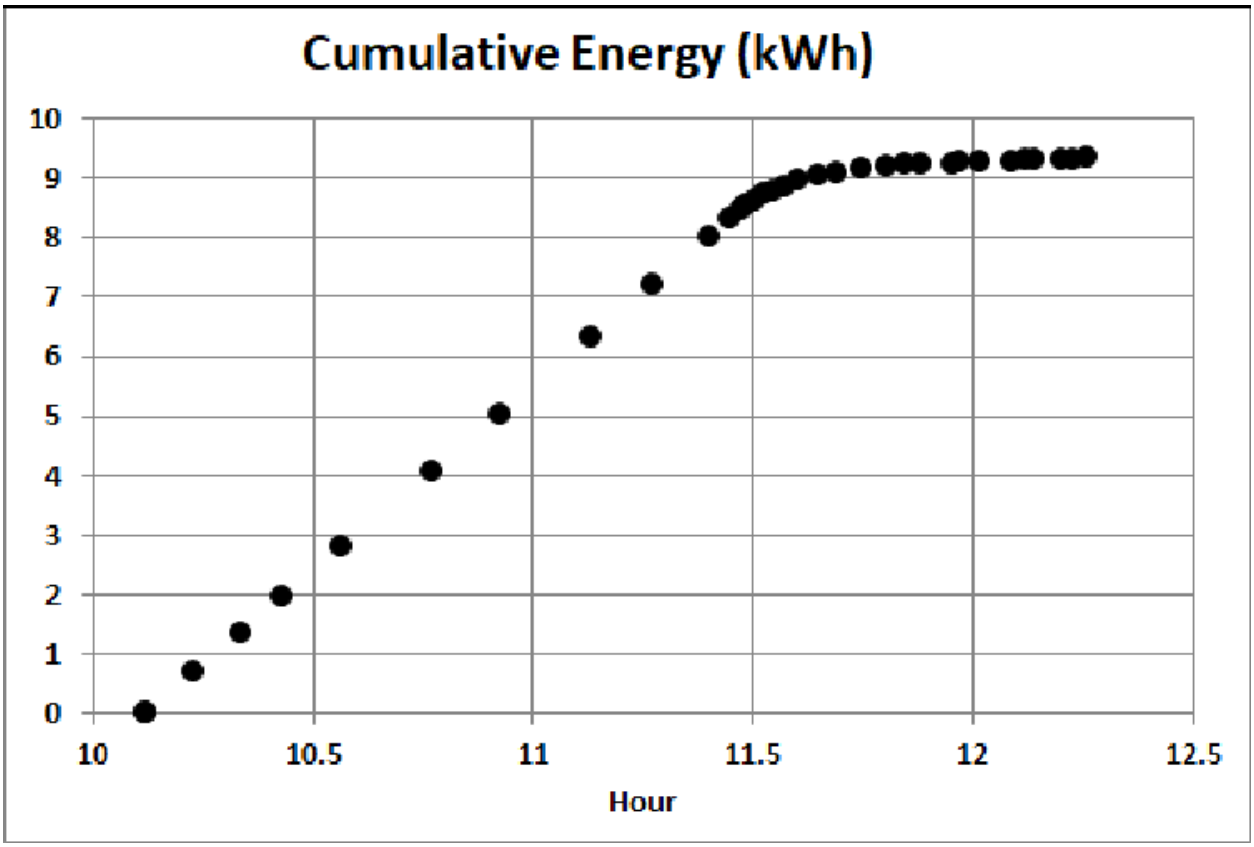
Since the power curve is nearly constant except for the last ~20 minutes of the ~5-hour charging session I conclude that the battery has several kWhs capacity beyond “100%” SOC and that the ~20-minutes slow down near the end is due to the 288 battery cells being voltage balanced.

For comparison here is same analysis for charging a 2013 Nissan LEAF with a 24-kwh battery (the CBEV battery is 60 kWh) from 46% SOC to 100%:



Notice that the level charging power is ~6.2 kW instead of the rated 6.6 kW because of charging losses.

Notice that the tic marks are every 10 minutes, instead of every 30 minutes for the CBEV graph.



Since the power curve is nearly constant except for the last ~45 minutes of the ~5-hour charging session I conclude that the battery has several kWhs capacity beyond “100%” SOC and that the ~20-minutes jagged slow down near the end is due to the 192 battery cells being voltage balanced.