# Tesla Talk with Tesla Tim

Time for an update on the performance of the Powerwall Battery System that I had installed on February 28th. If you read my previous article, then you know that I had 3 Tesla Powerwall's installed which should provide around 40 kWh of usable power. But is this enough to power my home? Let's look at some different situations and the results I have found.

**Scenario 1. Not charging the Tesla and A/C not needed.**

In this scenario we are just running lights, washer/dryer, TV, and other electronic devices in the home. Early in May I drove the Tesla to Kansas for about 7 days meeting this condition. Our average daily home power usage was 21 kWh while I was gone. I had the Powerwall's set to 40%/16 kWh reserved for back-up and 60%/24 kWh usable. We did not use any power from the grid for 6 days. So, if we have an extended power outage and I do not charge the Tesla or run the A/C, then we can power the home from just solar and batteries.

During this time the solar panels generated an average of 44 kWh of power per day. More than enough to run the house and charge the batteries. The Powerwall batteries provided an average of 9 kWh of power over night. This is not even close to the 24 kWh's of usable battery capacity.

**Scenario 2. Charging the Tesla but no A/C.**

This has been my typical scenario until recently. How much difference charging the Tesla makes depends a lot on how much you use the car. The more you deplete the battery in the car, the more power it will take to charge it. However, I now have enough data that I can get some

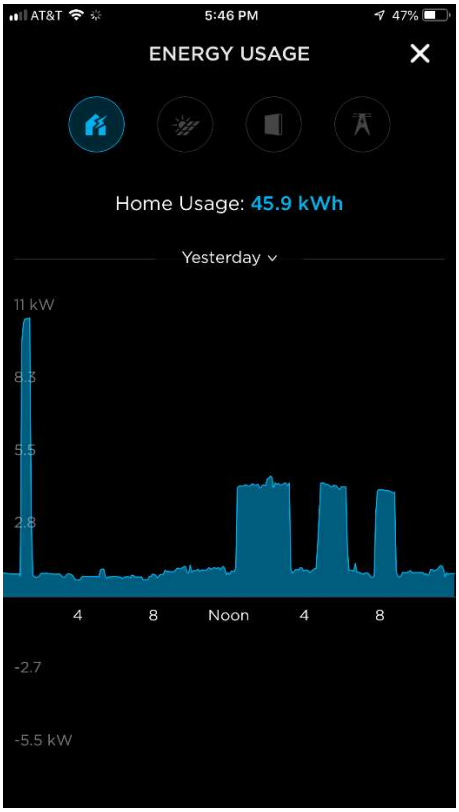
good average daily home power usage numbers. For the months of March and April my average was around 39 kWh per day. Based on the data from Scenario 1, I can say that the Tesla averages around 18 kWh to charge (39 kWh – 21 kWh). At my current setting of 40% reserved/60% usable the battery usually runs out around 2:30 AM and I pull power from the grid for a few hours until the sun comes up and the solar panels start producing power. However, once the solar panels produce enough power to run the house excess power is used to charge the batteries. Once the batteries are charged then the excess power is pushed to the grid. The power pushed to the grid can offset what I use from the grid.

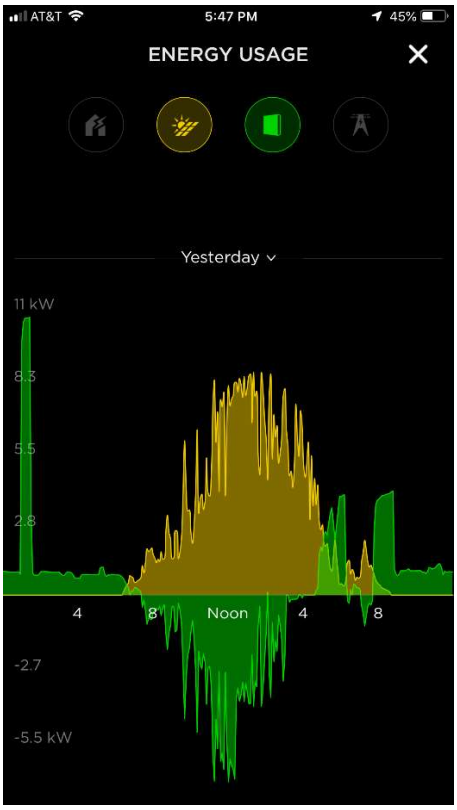
**Scenario 3. Charging the Tesla and running the A/C.**

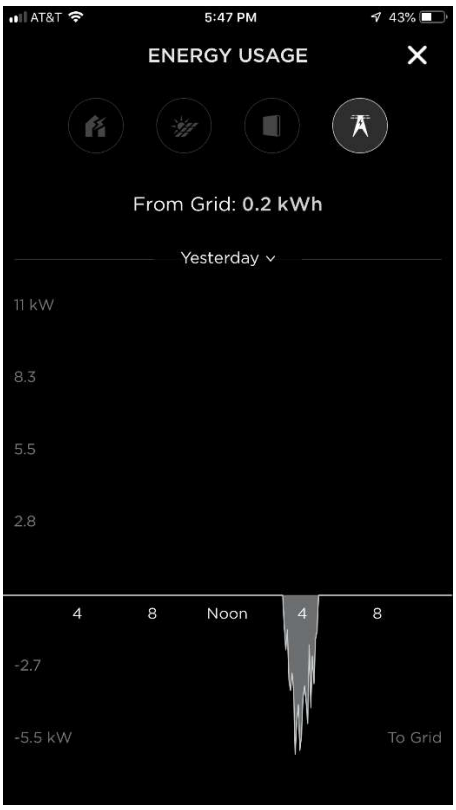
This scenario is just starting so my data is very limited. Based on what data I have so far, I expect my home power usage will increase to around 45 – 50 kWh per day. How long the batteries will last will depend on how much the A/C runs after the sun goes down and how sunny the day is. If it is a cloudy day and the A/C is running, then power may be used from the batteries to supplement power from the solar panels if needed, but only if power is available in the batteries. I will have more on this in the next update when I have more data.

Here are some charts from the Tesla App that illustrate what I am referring to.

The Tesla App shows that on 5/25/2019 the power to run everything in my home for 24 hours came from either the Powerwall's (35.1%) or Solar (64.9%). No power was needed from the Grid.


AT&T
5:46 PM
47%
ENERGY USAGE
Home Usage: 45.9 kWh
Yesterday
11 kW
8.3
5.5
2.8
4
8
Noon
4
8
-2.7
-5.5 kW


AT&T
5:47 PM
45%
ENERGY USAGE
Yesterday
11 kW
8.3
5.5
2.8
4
8
Noon
4
8
-2.7
-5.5 kW




## Electric Bill Information

Here is the bottom line. My billing cycle starts in the middle of the month. Roughly from the 13th of one month to the 12th the next month. I have over 8 years of billing data, 4 years before solar and 4 years after.

March = $89.43 (4-year average was $143 with solar / $151 before solar) Powerwall's were only installed for 2 weeks.
April = $14.82 (4-year average was $82 with solar / $159 before solar)
May = $ 11.24 (4-year average was $82 with solar / $169 before solar) (May's bill had a $1.31 credit for Supply Charges, I supplied more power to AEP then AEP delivered to me, and $12.55 debit for Delivery Charges.)

Tim Freidenberger
Tesla Model X owner