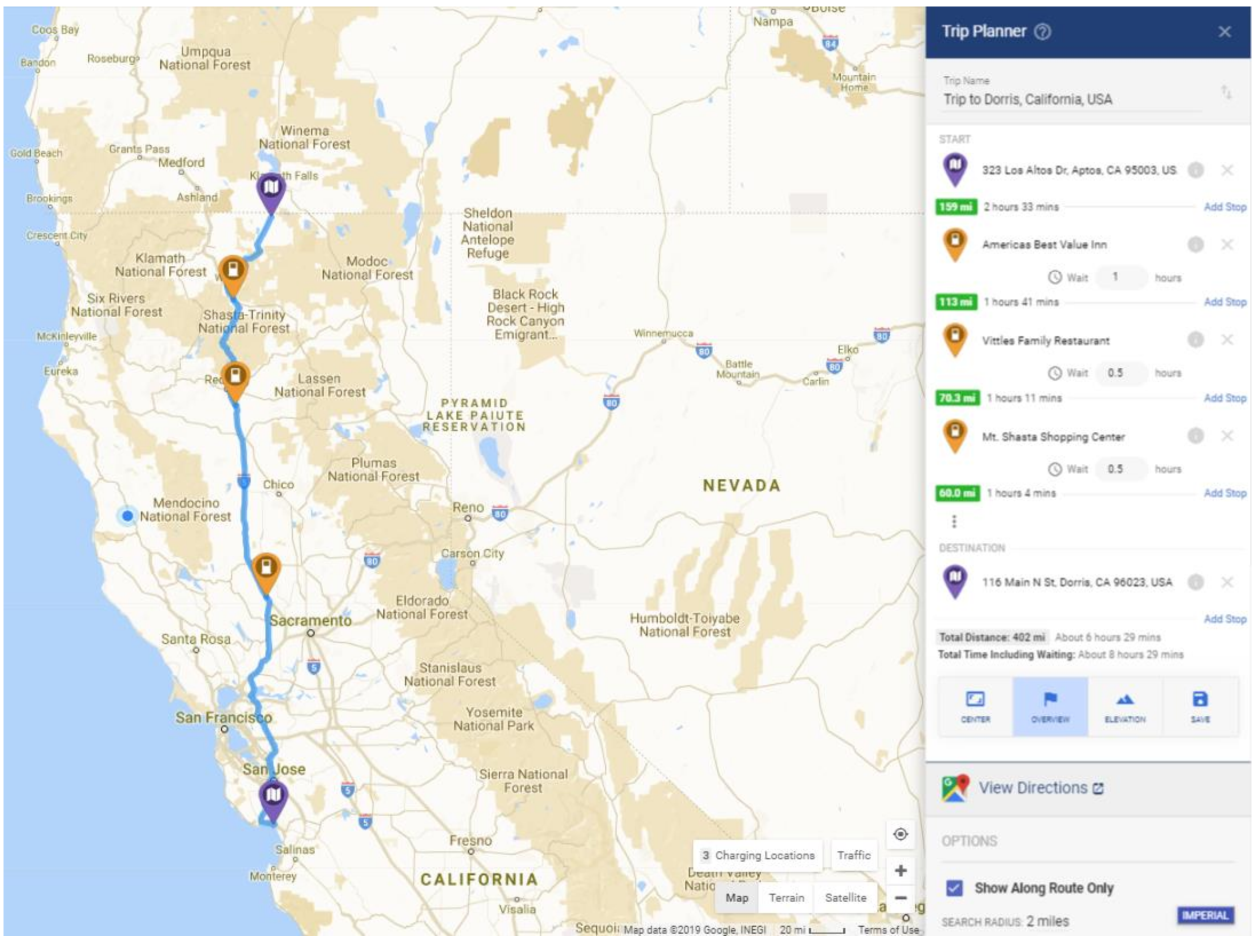
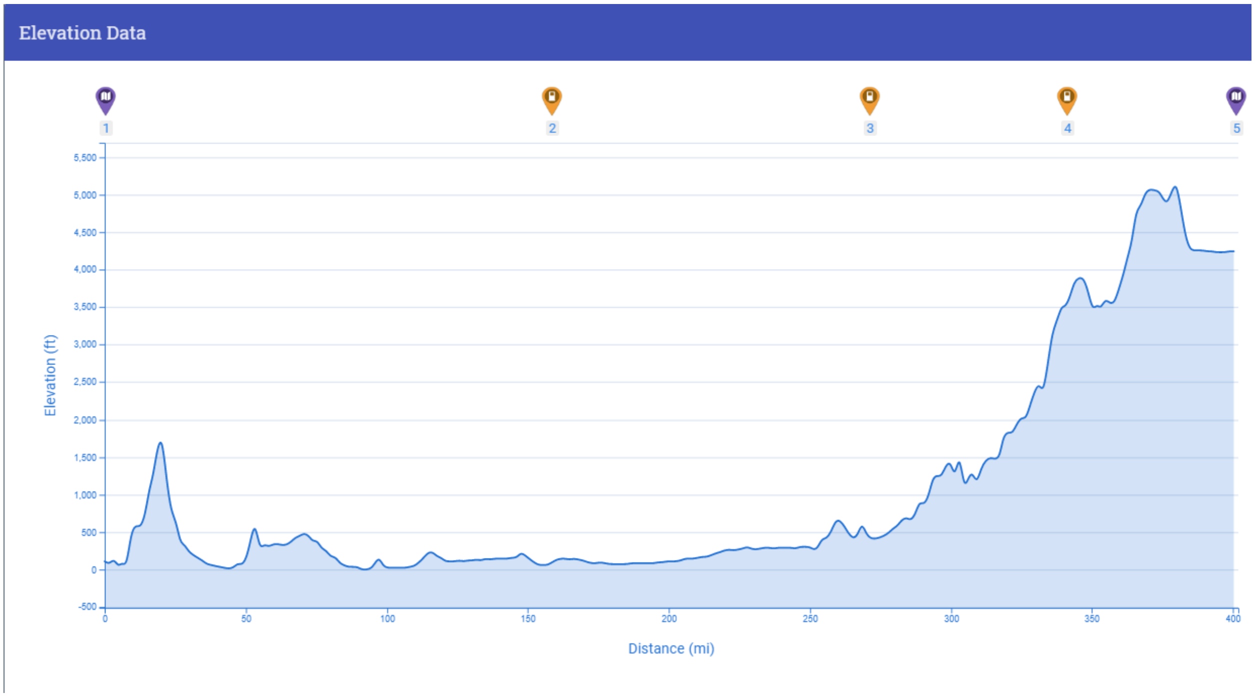
Road Trip, Santa Cruz to Dorris California, in one day

This last-minute road trip (planned the day before we left) occurred do to the need to deliver a cat back to its owner, who lives in Kennewick, WA (longer story). We agreed to meet half way.

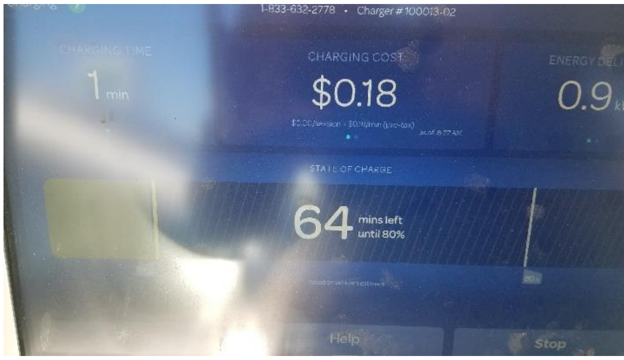
Originally I suggested Weed because there are no quick charge stations on that part of Hwy 97 but I decided that after a quick charge in Mt Shasta, it would be possible to do a round trip to Dorris, CA, (on the boarder of CA and OR) which is 120 miles.





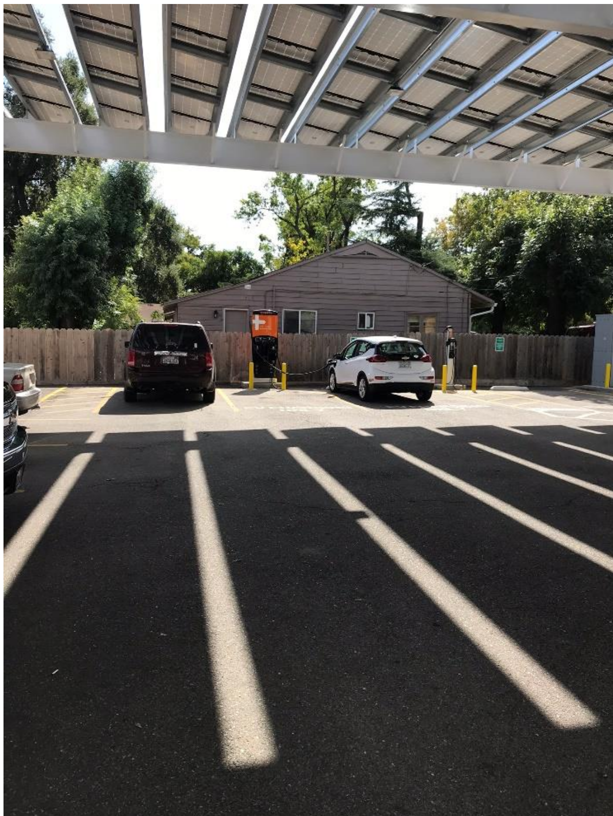
Summary:
First stop was very familiar, since we used it as the first stop on our last trip. It is about 160 miles from home and I figured there about be about a one hour charging stop giving us time for breakfast. Next stop was new (suggested by Michelle) and a better station because it had good reviews and was a 50kWh station. After this was the Mt. Shasta station which we used twice on our last trip and would use twice on this one. Again, a 50kWh station. The second and third station we only stopped for 30 minutes for the most efficient use of the charging station. On the way back we stayed over night in Red Bluff, using my own charging station and a 14-50 outlet at the hotel. Then one quick stop in Vacaville (electron city).

Story:
Fully charged, we left Aptos at 6:15am and headed for Dunnigan on Hwy 5.



We charged for one hour to get the battery up to 75%. This was all we would need to get to Anderson. Had breakfast and gave the cat a bit of a rest from road noise. Also got to stretch our legs a bit. Then in Anderson, adding another 113miles with little elevation change:

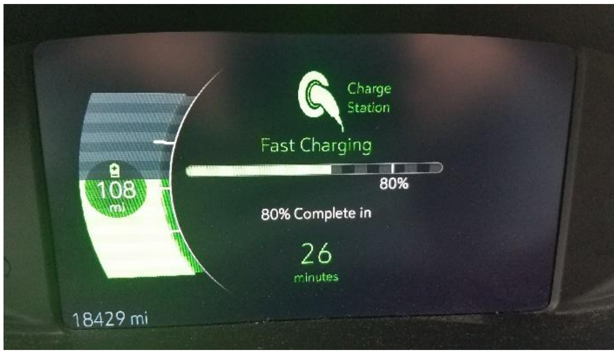
About 20% remaining, did a 30 minute charge after using 80.5 kWh and 271.2 miles down the road. The site is on the parking lot of a restaurant, Vittles, which had solar everywhere.



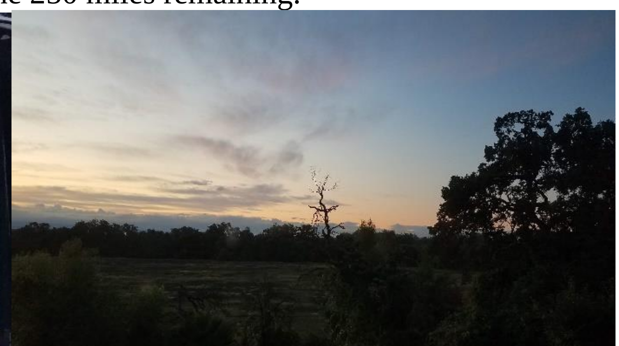
Next stop, Mt Shasta with a 2500 foot elevation though only 70 miles:

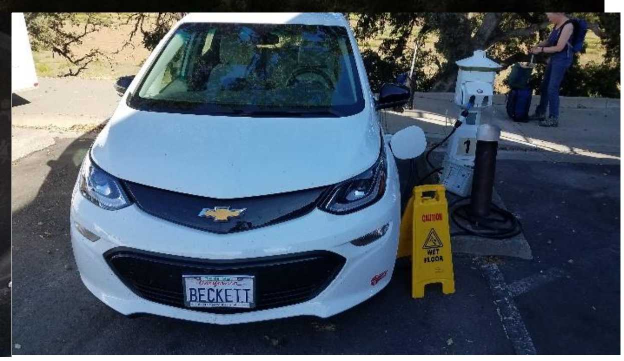
Got a couple of sandwiches and drinks after picking up just enough to do the 120 mile round trip with about a 2500 foot climb up the mountain to get to Dorris. A bit worried by the wet snow that started up just after Weed and continued most of the way to Dorris. On the way back it became quite heavy (big, dry, clusters of flakes) at the highest elevation, but no real accumulation to worry about. By the time we were almost in Weed and turned to rain again, but just a light rain.

Back in Mt. Shasta:



Arrived in Red Bluff at 6:30pm (550 miles in 12 hours, 15 minutes), charging up with a planned stay overnight at the same location as our last trip. We were happy to do an overnight charge using my charging station with the 14-50 outlets at this site. I don't really like to drive in the dark. Happy to do one stop in Vacaville for the 250 miles remaining.





Next morning, fully charged and only 250 miles left to return home. Using Hwy 5 the speed will be 70mph so best to put a few more kWh in before we get home. Like the Vacaville location on our last trip so that is where we stopped. Nut Tree road where there is a big shopping center (two in fact) and much to our surprise, another Electrify America station under construction just a few feet from where we were charging.

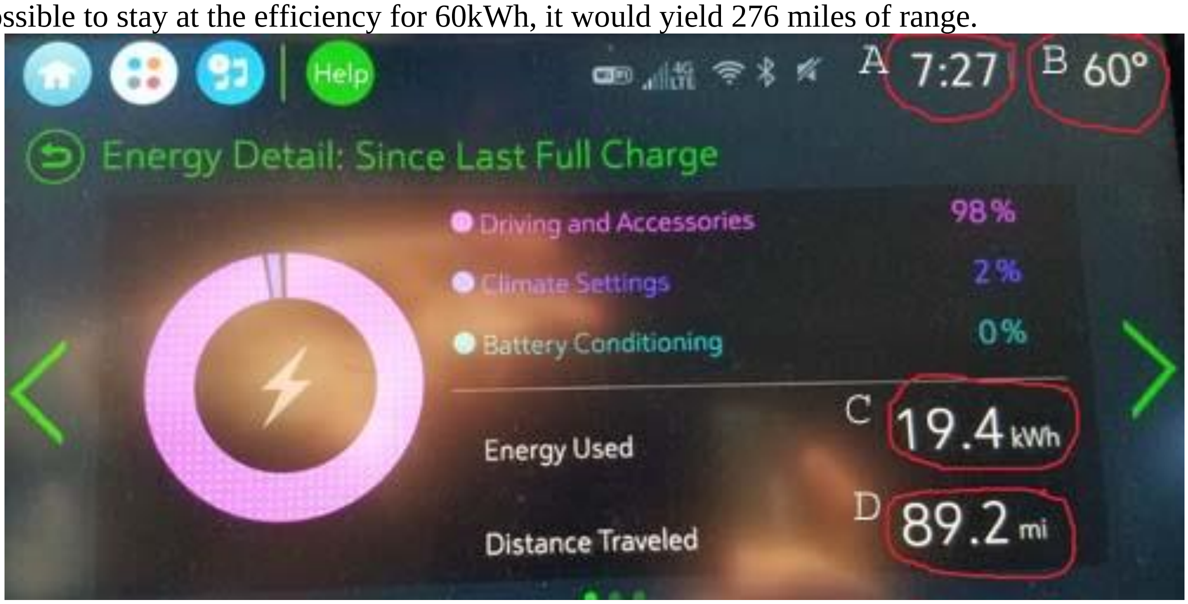
Then home at 1:30pm

Attachment A

There are some that just don't understand the relationship of gasoline mileage and electric fuel consumption. Gasoline cars are referred to as ICE (internal combustion engines, also infernal combustion engines) by people in the EV world. ICE cars range from approximately 20 to 50 miles per gallon of gasoline. Electric vehicles measure fuel consumption in kilowatt/hour (kWh). Miles per 1000 watt/hours of energy used. A watt is a measurement of volts times amps.

Electric vehicle fuel capacity is based on the kilowatt/hour of the battery. The Chevy Bolt EV has a 60 kWh battery and its Federal normal miles estimate is 238 miles for the 60KW capacity. That works out to 3.97 miles per kilowatt/hour (kWh). If I drive slowly or hyper mile, I am able to get more than 3.97 miles per kWh, then I will get more range. If I drive fast, do a lot of uphill driving or I am driving with a lot of road resistance, air conditioning or heater on, then I will get less than 3.97 miles per kWh. This is really the same concept as an ICE. The charger, built into the Chevy Bolt, is 7.2kWh when plugged into 240 volts alternating current (240vac). So if the 60kWh has been used up, it takes 8.33 hours to fully recover the 60kWh. A bit more than that due to losses in heat in the charger and cables. At 120vac, it will take twice the time because the voltage is half, so 120 times 30 amps or 3.6kWh. The charging unit that comes with the Bolt EV limits the current to 12amps but it will operate at either 240vac or 120vac depending on the plug adapter. Charging at 240vac with this unit is 240 times 12 or 2.88kWh or 20.83 hours of charging time for a 60kWh battery. On 120vac, 1.44kWh or 41.67 hours of charging time. Be sure your Bolt EV is set to 12amps and not 8amps for Level one charging (the default setting is 8amps).

The display that come standard in a Chevy Bolt EV show kWh used and miles driven, since the last full charge or mileage efficiency. In the image below, C is kWh and D is miles driven. Also, on this display is B, the current outside temperature and A, the time of day. Temperature can cause the Chevy Bolt EV computer to reduce the current during charging to prevent damage to the battery. This display would indicate that the car had driven 4.6 miles on 1kWh. If it were possible to stay at the efficiency for 60kWh, it would yield 276 miles of range.



The speedometer display shows the current miles per kilowatt/hour (C), with speed and total current capacity of the Bolt EV (B). It also includes the standard odometer miles on the car which is useful if you take the picture and don't recall where you were on the trip when the picture was taken. Note in the display marked with a B, there is a Max and Min miles with the expected miles based on your current average miles per kWh. Usually when I am on a road trip, I use the Min miles and compare it to the Google map display showing the miles to my destination. This is not an exact measurement and the total capacity remaining on the battery, shown in green (like a gasoline fuel gage) in the circled area labeled with B. Note the three white lines to the right of the red circle. These mark the quarters of the battery capacity. Assuming a 238 range, each quarter is about 60 miles of range. As your battery capacity is reduced, the Max, Min and expected range numbers get closer together. If the expected miles to your destination is a greater number when the capacity is in the last quarter, you should find a charging station before your final destination. Never happened to me but I do careful planning before my road trips. The lowest level was in Mt Rainer, arriving with 20 miles of range. Note that the color of the capacity indicator changes to orange at the last eighth of the capacity.