

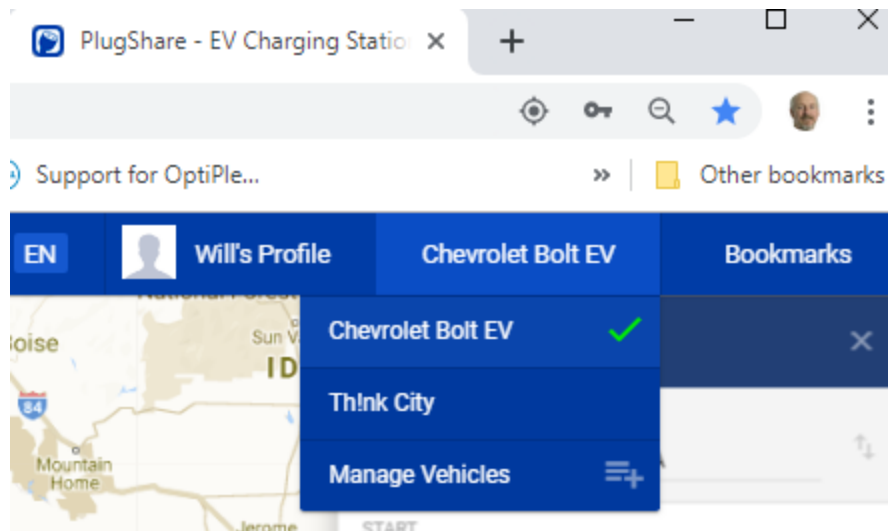
## PlugShare.com trip planner



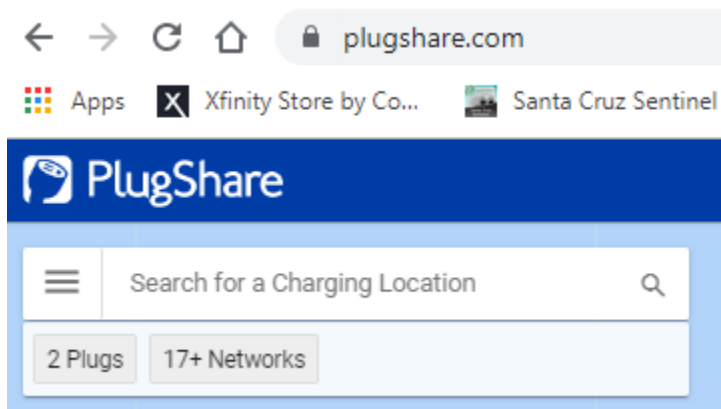
1996 Three Bridges Event, Golden Gate, Richmond/San Rafael and Bay Bridges

My first EV trip planning experience was figuring out how to get from my home in Palo Alto to the “Three Bridges Event” in San Francisco. In 1996 this was a challenge for my Chevy S-10 Blazer conversion with only 60 mile range. My Chevy Bolt EV has increased that range four-fold and I've taken several extended road trips. At first it wasn't easy. Because of the limitations of each, I had to combine information from three separate applications: Plugshare (an earlier, more limited version); Microsoft Streets and Trips (not updated since 2013, no charging information); and Google Maps (limited to 12 stops and little charging information). PlugShare has added a trip planner and some other nice features. Now I plan with PlugShare, then add charge stops to my Google maps for use enroute. But getting acquainted with and using all the features in PlugShare application can be a bit tricky, so I'm writing this article to, hopefully, make it easier for everyone.

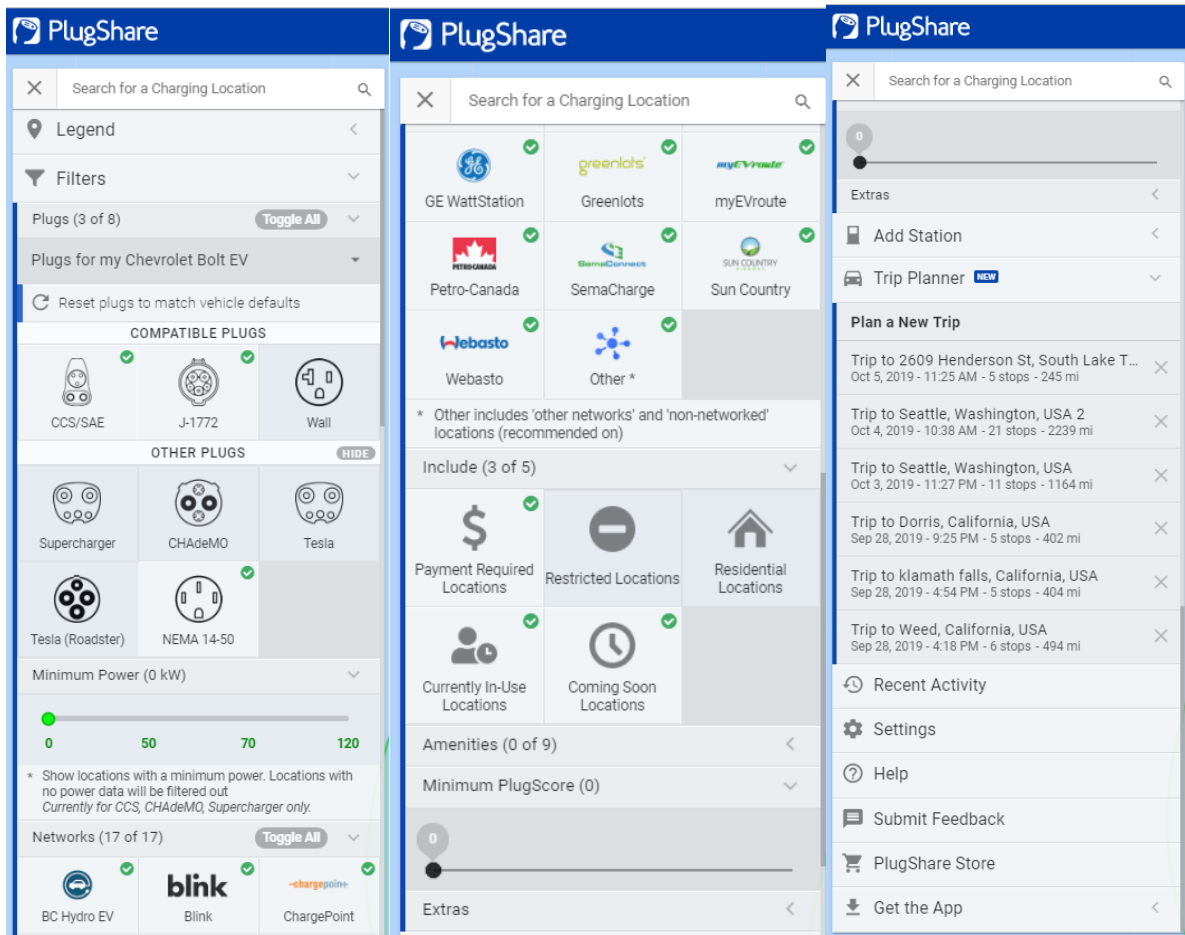
Start by going to PlugShare and register an account. You will find the Register option on the upper right. Create a profile and enter the type of car you own. This will help later because it knows how much range your vehicle has. Once you have done this and logged on, your name and the type of car you have will be displayed. If you have more than one electric vehicle, you can put them in.



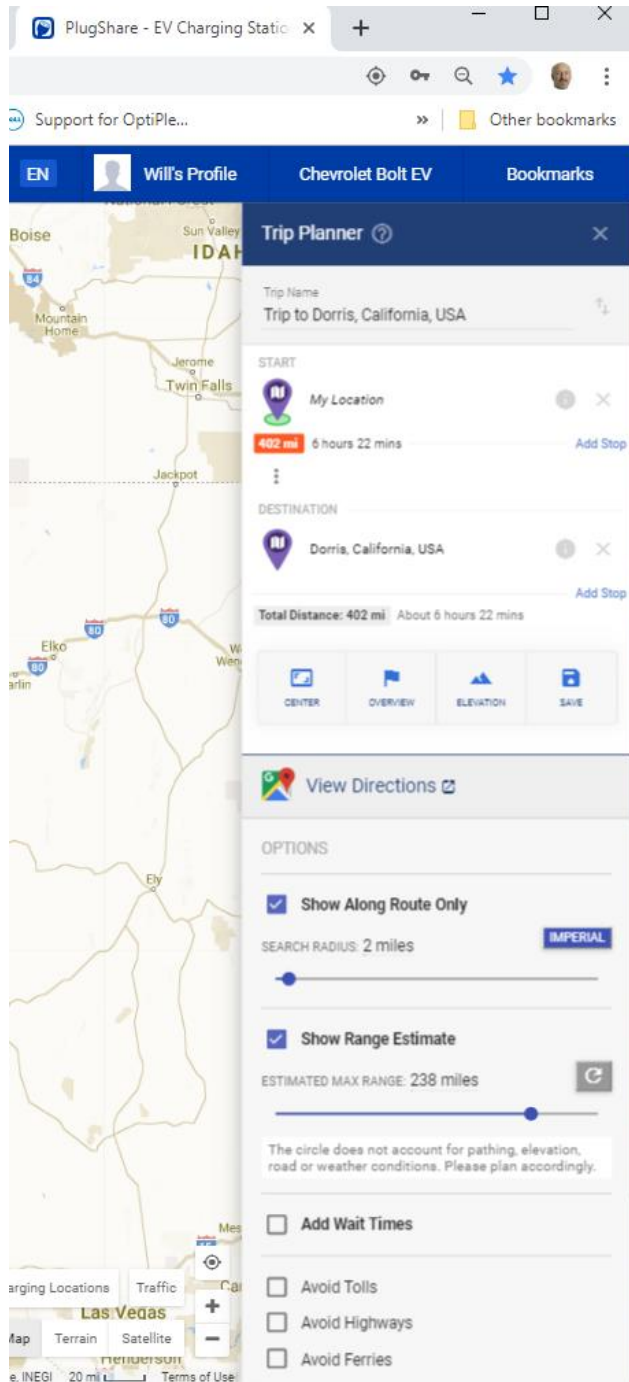
Start the process by selecting the vehicle you will be using. Then click on the menu on the upper left of the display. It is a typical hamburger menu with three horizontal lines.



Now scroll down, looking at all the filter settings on the way. In this panel (pictured below in three columns), you will notice plug types that will all be selected, so deselect the ones you will not be using as you scroll down. Notice as well that you can select station brands and the minimum power that you would like PlugShare to search and you can select only publicly available stations or add restricted stations. Be careful with that selection because if you are stopping at hotels on your trip, they may have a restricted station for their clients, and you might want to stay there. Note that if you want to add a station that PlugShare doesn't currently show, you can do that as well but be sure you have all the options checked because there are very few stations that have not been added already.



The next option is the Trip Planner (wow, Trip Planner is on the third column above). Select this and click on Plan a New Trip. By the way, any trips you save will be listed below this if you want to go back and look at trips you have planned before. On the right column, your cursor will be on the destination field, above this field will be the starting location which is assumed to be your current location. Easy to just click on this field and change it if your current location is not where you will be starting. Type in your destination and click on search.



Under the start location will be an orange box which shows the total miles to the next stop. Since no charging stations have been selected yet, they will just show on the map and not in this column.

At this point you need to know a bit about your driving habits and efficiency. I know that I generally have no problem getting 200 miles of range regardless of how I drive and the conditions. I also know that the best quick charging is with less than 40% to 50% of battery capacity. Above this amount current is limited and your wait time at the station increased. Best to charge to 60% or 70% and drive to the next station (about 140 miles) than to try to fully charge. Usually when I leave with the full charge, after

and overnight charge, my first stop will be 160 to 200 miles, then, if I will be covering more miles for the day, I look for stations that are 120 to 140 miles and only charge to 60% or 70%. Typically, these stops are only about 30 minutes with stations that are 50kWh or better. The Chevy Bolt EV won't take more than 52kWh because of the software limitations in the design of the car.

The next step in the process is to select charging stations based on this information and the reviews and shopping options at the charging site. This information will be listed as you select sites. I will be using my current location as the starting location and Dorris California as the destination for this example. It is a recent trip I took in one day and I used PlugShare to plan it.

On the map, after making the start and destination selections, there will be a circle that appears to show the expected distance your vehicle will be able to drive on one charge. This can be used to select the first station. You will want to select a station inside the circle. I selected a station just inside the circle.

**PlugShare**

Olive Pit

**9 Olive Pit**  
CCS/SAE  
ChargePoint

**Add to Trip**

BOOKMARK ADD PHOTO DIRECTIONS EDIT

2156 Solano St., Corning, CA 96021

+1 888-758-4389

\$0.20/kWh plus \$0.04/hr

Parking: Free

EV Parking, Restrooms, Dining, Shopping, Lodging, Grocery

Open 24/7

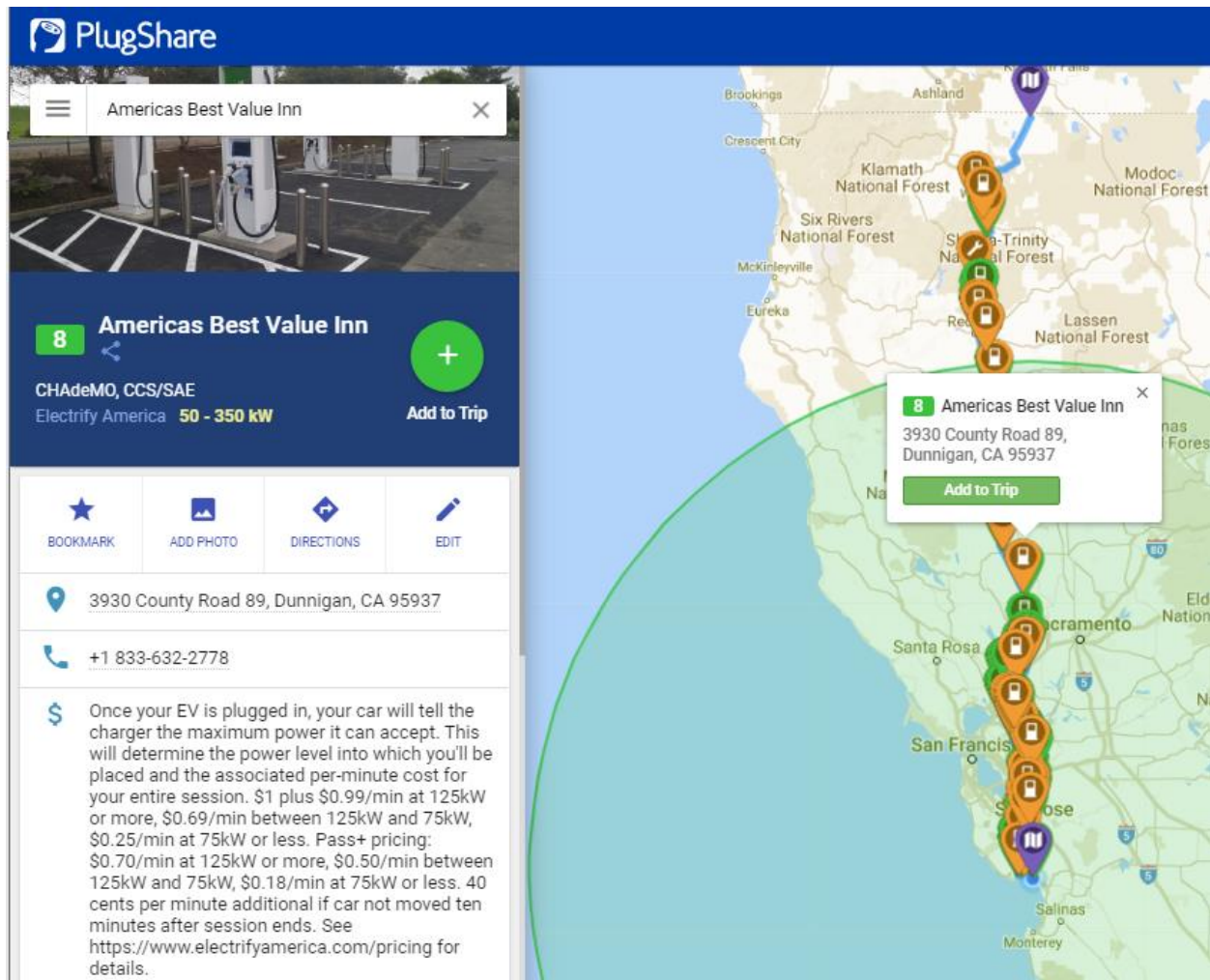
55A (~22kW) CCS DCFC, located behind Olive Pit restaurant near car wash. Chargepoint authorization is required.

Charging rate is reduced above 86F; expect 16 kW at 95F. It's max is 20 kW don't downgrade it if you expect more it is working properly.

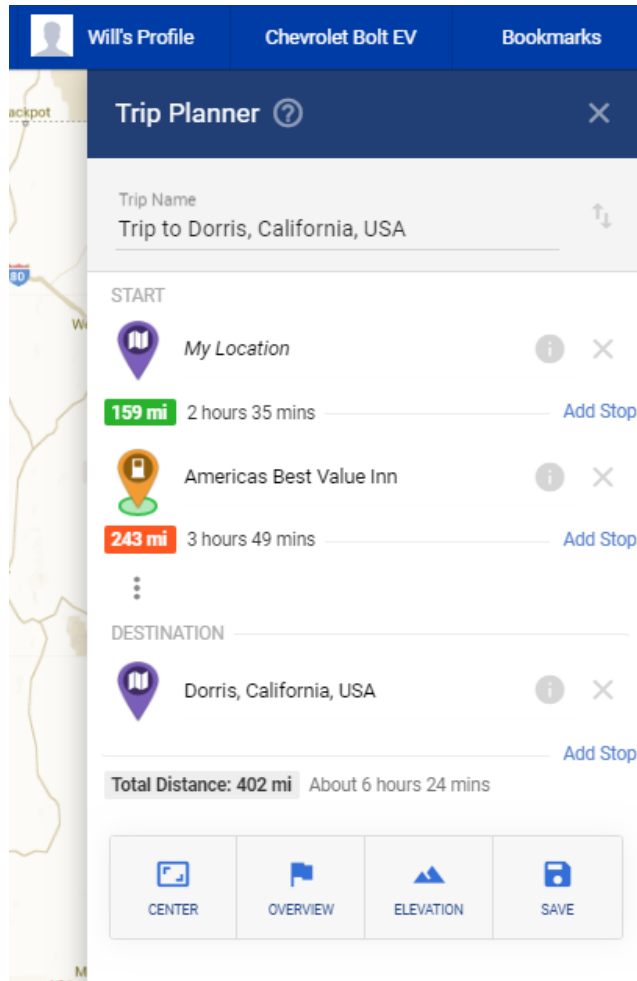
Plugs (1 Kind) [More Details](#)

CCS/SAE **1 Station**  
ChargePoint

It is in Corning California. Notice on the left, the details about the station I selected. Comments show that it is only allowing ~22kW on the fast charging station. It is best that we move to the next orange marker inside the circle. In this case, it is a Carl's Jr but also in the 20 kW range, on to the next.

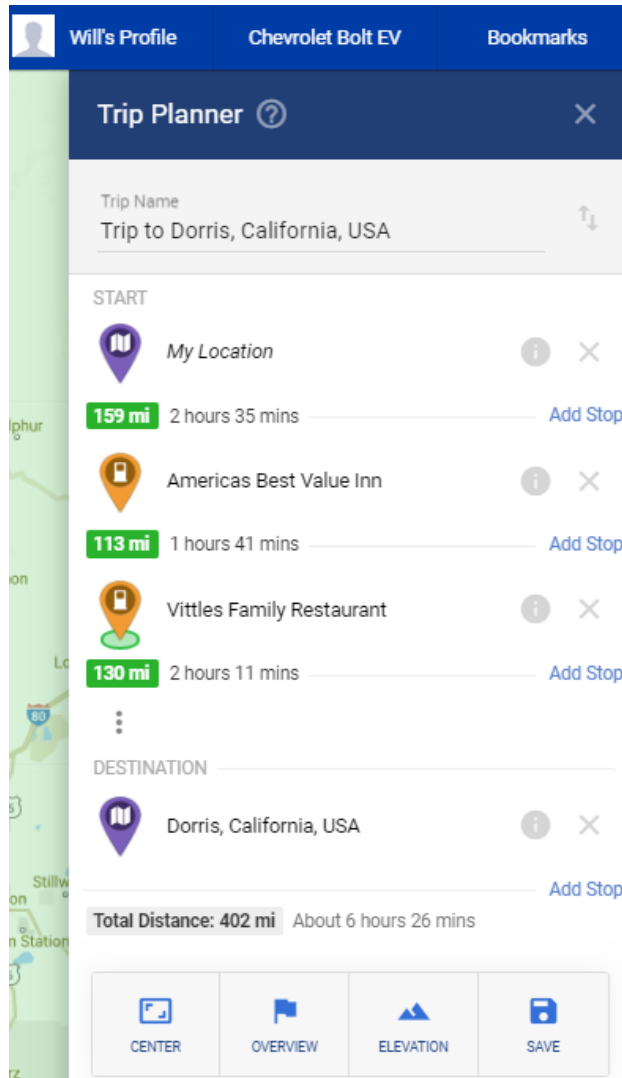


The next station, pictured above, is an Electrify America station in Dunnigan California. Notice that the left column shows that this station is 125kW and lists the fees. I have been to this station and know that there are four quick charge stations, one with CHAdeMO and CCS and the others with dual CCS (there are more cars with long range using the USA standard CCS than Nissans using the Japan standard CHAdeMO). I also know this site has a lot of solar on the rooves of the motel where the stations are installed, so it is very clean power. I am going to select this as my first charging stop. So, I click on the Add to Trip button (seen in the image above).

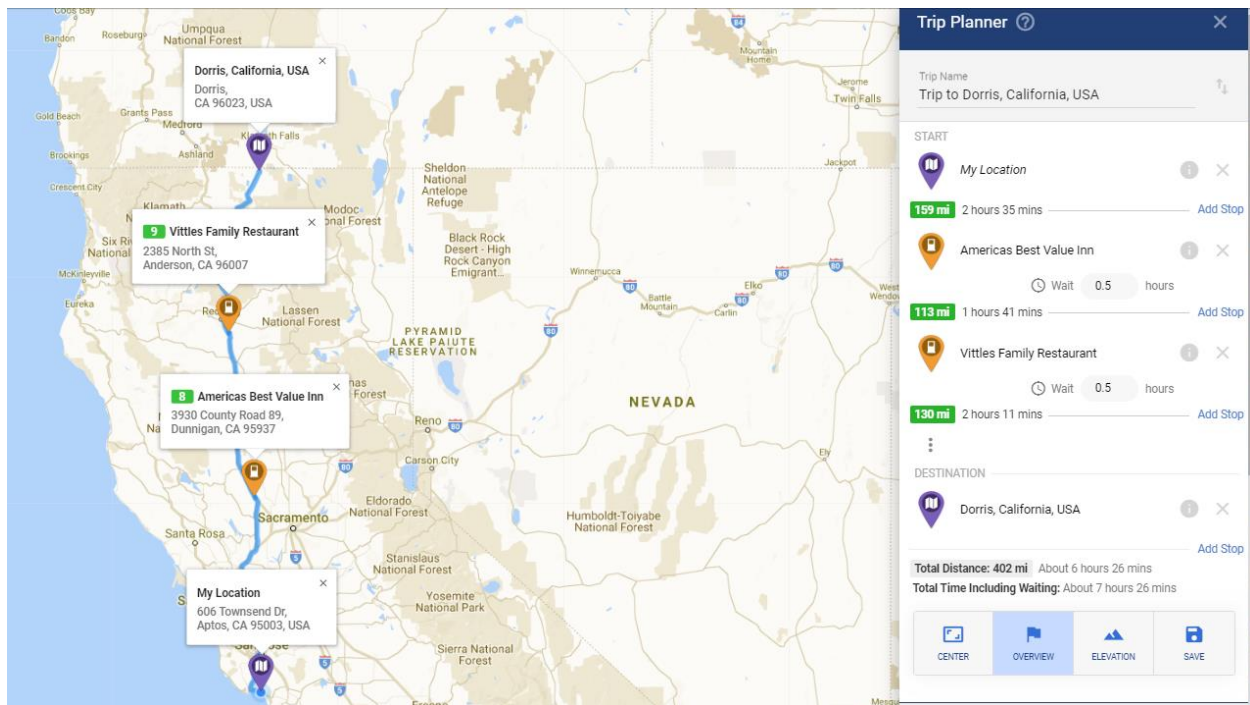


Note the green box below My Location in the image above. It shows the distance to the charging station as 159 miles, 2 hours and 35mins and it is green in color. The color is communicating that your vehicle has the range to reach this charging station. Below the charging station is a similar block but it is red/orange and shows 243 miles, 3 hours and 49 mins. This means that your car will not be able to make it to the next destination, so you will need to stop at another charging station. Now assuming you only charge to 60% or 70%, your range will be 120 to 160 miles, so it would be best to find a station within that range from this charging station. Using the same method as before and selecting a station with 50kW or more, I found a station in Anderson California and added it to the trip planner.





Note that now all the boxes below the stops are green. It is important to watch the tools you use in your car to be sure your charge will, indeed, get you to the next charging station, without range anxiety. If you really want to use your planner to show you the total travel time, check the box in this column to Add Wait Times. Add at least 30 minutes (0.5 hours) to each charging stop. Also notice there are buttons below the Total Distance, Center, Overview, Elevation, and Save. Use Overview to show only the stations you will be stopping at, on your route. Use Elevation to give you a heads up about major elevation changes so you can adjust your charge time to give you more range as needed.



Now Save your trip, so you can come back and make adjustments later. When I did this trip, I also stopped in Mt. Shasta at a really great 50kW station in a shopping center with rows and rows of Tesla charging stations. I did this because I needed to round trip Dorris California which is 60 miles from Mt. Shasta and if you look at the elevation map, there is a lot of uphill on that trip. I ended up staying in Red Bluff for the night after 800 miles and did it in 12 hours. I would have gone back home the same day but prefer to keep my driving in daylight. That story can be found on my web site <https://beckettpcs.com> click on Other Links.

I do still use Google Maps in the car. After the trip is planned, I enter the charging stops into Google Maps using the Android application in the Chevy Bolt EV, and track the miles to the station and minimum available miles meter and total battery capacity. If you are stopping at locations that are not charging stations or you would like to take a different route than the one offered by PlugShare, just click on the map or click on Add Stop and enter the address.

Hope this information was helpful.