DOCKETED	
Docket Number:	23-lEPR-03
Project Title:	Electricity and Gas Demand Forecast
TN #:	252122
Document Title:	Tesla Comments on Aug 18 Load Modifier Workshop
Description:	N/A
Filer:	System
Organization:	Tesla
Submitter Role:	Public
Submission Date:	9/1/2023 2:40:49 PM
Docketed Date:	9/1/2023

Comment Received From: Tesla
Submitted On: 9/1/2023
Docket Number: 23-IEPR-03

Tesla Comments on Aug 18 Load Modifier Workshop

Additional submitted attachment is included below.

August 31, 2023

California Energy Commission

Docket Unit, MS-4

715 P Street

Sacramento, CA 95814

Re: Docket No. 23-IEPR-03—Comment on Inputs and Assumptions for Light-Duty and Heavy-Duty Vehicles

California Energy Commissioners and Staff:

Tesla greatly appreciates the opportunity to comment on the Inputs and Assumptions for the Light-Duty Vehicle and Medium- and Heavy-Duty Vehicle Forecast presented at the August 18 Workshop on Load Modifier Scenario Development.

I. Introduction

Tesla's mission is to accelerate the world's transition to sustainable energy through the manufacture and sale of battery electric vehicles (EVs) and other clen energy technologies. An indispensable component of that mission is the development of our direct current fast charging (DCFC) Supercharger network, which is the world's largest EV fast-charging network. Tesla has long recognized that convenient access to fast and reliable EV charging is essential to customer adoption of EVs and acceptance of this relatively new technology.

First opened in 2012, the Tesla Supercharger network now has more than 21,000 posts in North America, over 5,800 of which are in California, and is experiencing 45% year-over-year growth. This growth is driven by need and customer experience. As EV sales accelerate and existing sites see increased utilization – and as EVs proliferate in new areas – Tesla builds supercharger sites to keep up with customer demand and minimize charging wait times. In 2021, Tesla started providing access to non-Tesla EVs at select Supercharger stations in Europe[1] and has since

[1] https://www.tesla.com/support/non-tesla-supercharging

announced that it will provide access to EVs in North America as well,[2] making it even more critical to continue growing the network at a rapid pace.

II. California Must Ensure that Distribution Capacity Buildout Stays Ahead of EV Charging Needs

Building out an EV charging network at sufficient pace to keep up with demand from EV drivers is an enormous challenge. Figure 1 shows the pace of Tesla's EV sales vastly outpaces the pace of Supercharger build. If the buildout of charging stations does not keep up with EV sales and EV driver demand, we run the risk that wait times for charging could increase, leading to less optimal customer experience, which could make future car buyers less likely to choose an EV.

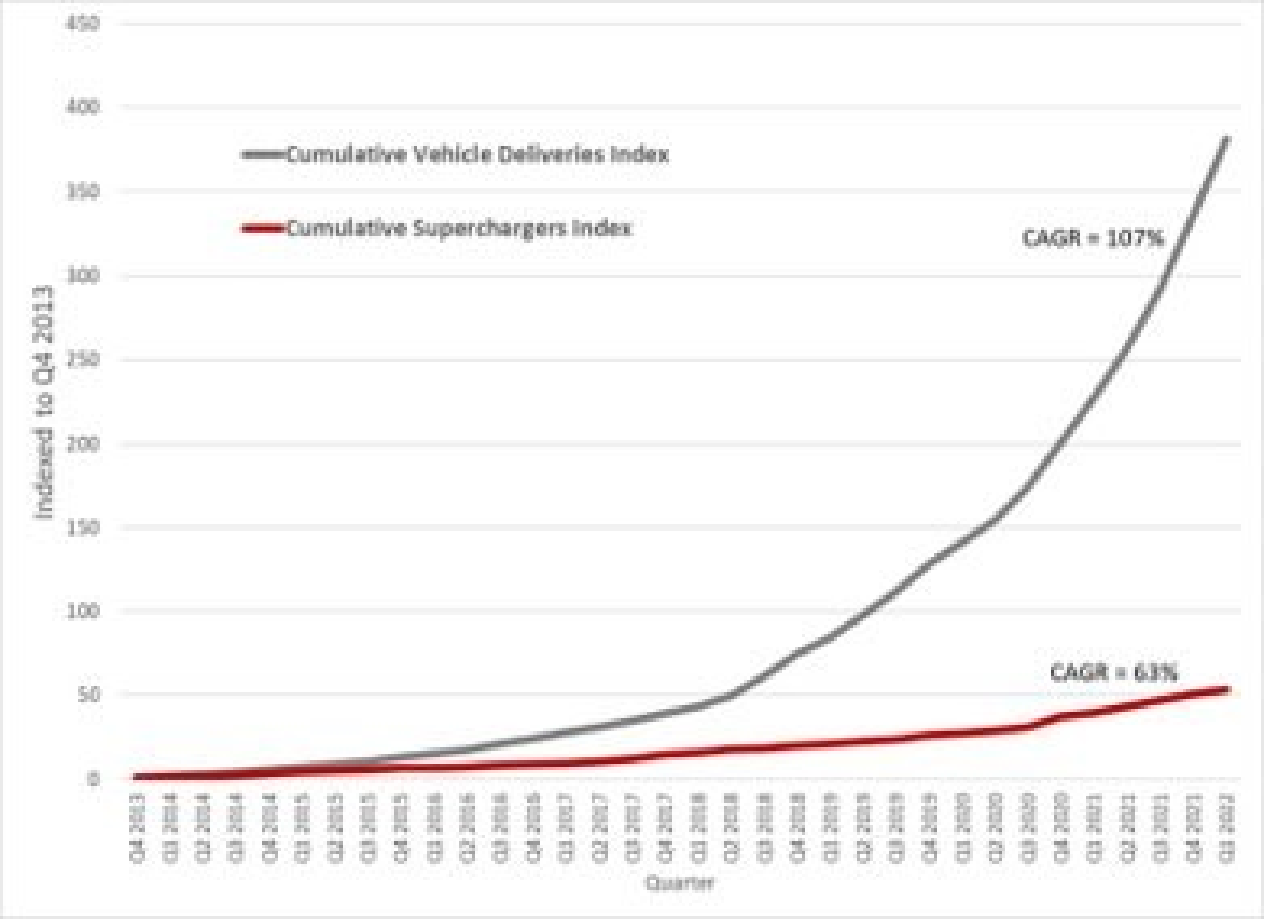


Figure 1: Tesla Supercharger build compared with Tesla EV deliveries.

[2] https://www.tesla.com/blog/opening-north-american-charging-standard

According to the 2023 J.D. Power EV Consideration Study, the number one reason car buyers decline to buy EVs is lack of access to charging.[3] While roughly 80% of charging is done at home or where drivers are already parked for longer periods of time, access to DC fast charging to enable longer distance travel and for those who do not have access to home charging is important. Thus, ensuring we can build the needed charging capacity in time to ensure drivers are able to charge their cars when and where they need to, without undue wait, is critically important to California's climate goals.

Unfortunately, as Tesla strives to build out our Supercharger network at a pace fast enough to keep up with demand, we are increasingly running up against significant delays caused by insufficient infrastructure and/or electrical capacity needed to deliver energy to our sites, which have increasing power needs to serve growing driver demand. This problem is particularly acute in California, which leads the nation in EV sales and also has other electrification goals driving additional demand for power.

Figure 2 shows it takes longer to plan and construct a Supercharger network in California than in other parts of the country. While there a many factors that impact a timeline to construct a charging site, one factor that can cause delays is the need for utilities to make distribution system upgrades at certain sites where sufficient capacity is not available to serve the load. In some cases, it can take more than four years from the time capacity is requested to the date it is available. This is especially problematic along travel corridors in rural/agricultural areas because they lack sufficient electrical infrastructure typical of areas with larger populations. However, this is precisely where large charging sites must be located to meet driver demand.[4]

[3] https://www.jdpower.com/business/automotive/electric-vehicle-consideration-study

[4] In the "Joint EV Parties Comments" to the May 9 Commissioner workshop on clean energy interconnection, Tesla, Electrify America, ChargePoint and EVgo make recommendations for accelerating energization timelines for EV charging sites, including creation of a multi-stakeholder working group to address travel corridors.

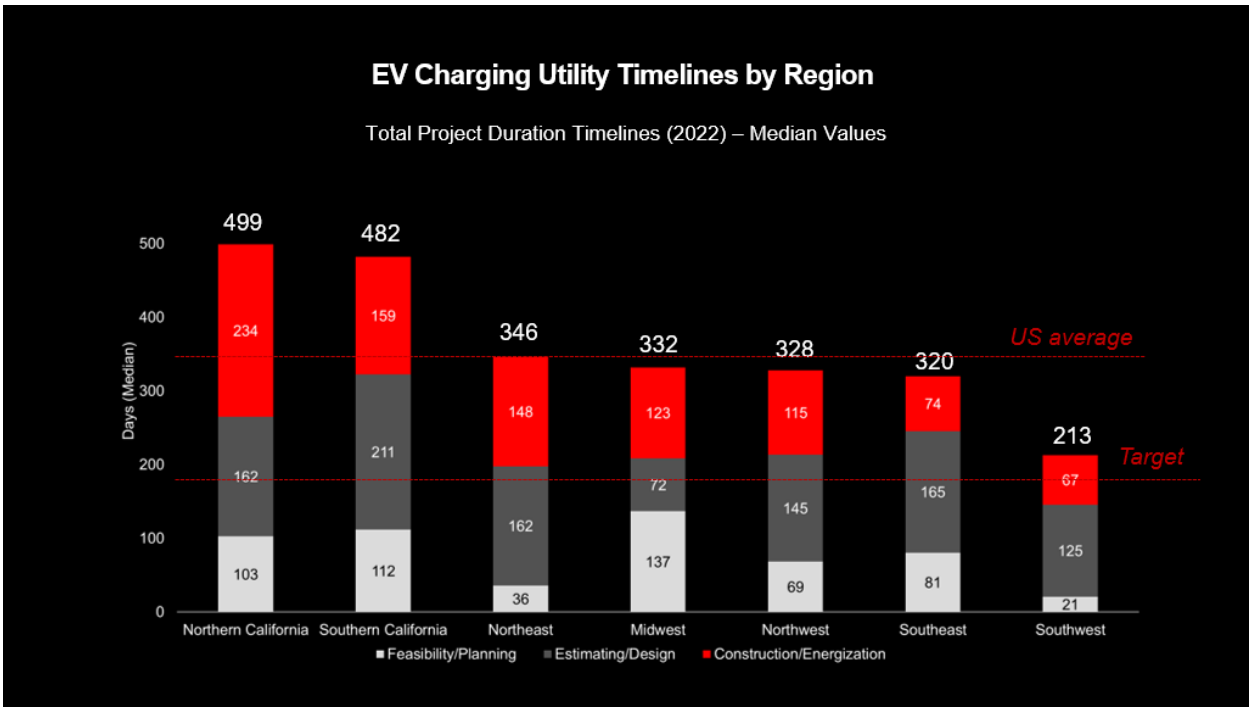


Figure 2: EV Charging Utility Timelines by Region

The problem of wait times for capacity upgrades is only likely to increase as EV sales continue to accelerate, charging providers seek to access federal funding from the National Electric Vehicle Infrastructure (NEVI) program, medium and heavy-duty vehicle electrification is accelerated by California's policies, and excess capacity on the system is exhausted. For this reason, accurately planning for load growth necessary to serve future EV drivers' demands is critical. Getting the load forecast right will allow the state's utilities to build out sufficient T&D infrastructure in advance of service requests from charging providers, allowing new charging stations to come online in a timely manner.

If sufficient capacity is not available in a timely manner to meet EV drivers' demand, would-be EV drivers will be less likely to buy an EV, jeopardizing the state's ambitious climate goals. As the single source for future load growth forecasts in California, the IEPR is therefore a critical component of ensuring our goals can be achieved.

III. The EV Adoption Forecast Should Match the State's Policy Goals and Regulations

In Staff's presentation on the Light Duty Vehicle (LDVs) Demand Forecast Inputs, Assumptions and Scenarios, staff described two types of adoption forecast for LDVs.

- The baseline demand forecast is based largely on consumer adoption preferences driven by economic and demographic variables, fuel prices, incentives and vehicle attributes.

- The Additional Achievable Transportation Electrification (AATE) forecast assumes the same fleet population as the baseline forecast, but it "assumes a market share for Zero-Emission Vehicles that is the same as projected by the Air Resource Board's Advanced Clean Cars II (ACC II) Rule."

In considering the two scenarios, it is important to note that the ACC II Rule is not a projection or prediction – it is a requirement with which automakers must comply. Creating a rule that all new LDV sales in CA must be ZEVs by 2035, but adopting a load forecast that assumes lesser EV adoption would likely have one of the two following consequences.

The first is that the load forecast becomes a self-fulfilling prophecy wherein the lower load forecast for EV charging causes utilities to under-invest in distribution infrastructure necessary to support EV charging, and the subsequent lack of needed charging stations dissuades customers from buying EVs, causing the ACC II goal to be missed.

The second possible outcome is that the state will achieve the ACC II goal of 100% ZEV sales by 2035, but EV drivers will have a frustrating experience of congestion and wait times at charging stations. Neither of these two outcomes is optimal from a policy perspective.

For this reason, Tesla recommends the Commission adopt as the primary load forecast for light-duty vehicles in the IEPR an AATE forecast that assumes the ACC II mandate will be achieved. Similarly, the Commission should adopt a forecast for charging demand from Medium and Heavy-Duty trucks that assumes the ARB's Advanced Clean Fleets requirement is met.

IV. The Forecast Should Ensure Accurate Ranges for Electric Heavy-Duty Trucks in the Truck Choice Model

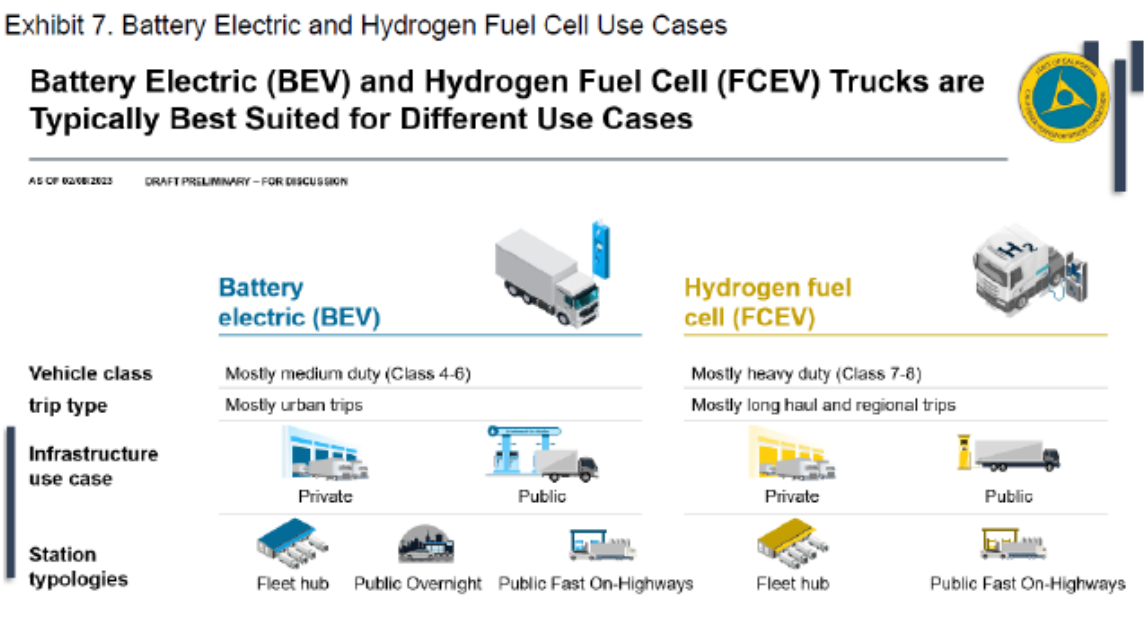
In developing a forecast of energy needs to support the transition of the transportation sector writ large to zero emission vehicles, it will be important to ensure that the presumed uptake of

ZEVs reflect realistic assumptions about the type of vehicles that will be utilized in different segments. Tesla is particularly concerned that in the case of forecasts related to ZEV adoption for regional and long-haul goods movement, certain assumptions could result in understating the electrical needs required to support the transition by embracing certain, unjustified perspectives regarding the appropriate duty cycles for battery electric vehicles (BEVs) versus hydrogen fuel cell vehicles (FVCs).

Because we do not have visibility into the specific assumptions used by the Commission to forecast the type of ZEVs that it assumes will be deployed in the goods movement segment to build out the forecast of electrical demand, we do not know if it has embraced these problematic assumptions.

For example, earlier this year, the California Transportation Commission issued a technical memorandum through which it sought to define a "minimum viable network" for battery electric vehicles to support goods movement in the state.[5] As reflected in the graphic from the CTC study below, the CTC is explicit in its acceptance of the notion that that BEVs are best suited for relatively shorter range and lighter-weight duty cycles and that fuel cell vehicles are positioned as the solution for longer range, heavier duty cycles.

Exhibit 7. Battery Electric and Hydrogen Fuel Cell Use Cases



[5] CTC Technical Memorandum Re- Methodology Used to Identify the Proposed Top Six Priority Freight Corridors and Three Scenarios of Zero-Emission Freight Stations Needed for the Senate Bill (SB) 671 Clean Freight Corridor Efficiency Assessment, March 8, 2023.

The fundamental assumption of the respective domains in which BEVs vs FCVs play is highly contestable. For example, in sharp contrast to the CTC's assumptions, the International Council on Clean Transportation (ICCT) offers a very different perspective on the anticipated role of fuel cell vehicles in the MD/HD space. In a recent study the ICCT published that looked at infrastructure needs nationally to support MDHD ZEV adoption through 2030 they found that "there is no case of positive Total Cost of Ownership for hydrogen trucks relative to battery electric trucks."[6]

It should come as no surprise that Tesla has concerns with the CTC's assumptions, given our development and deployment of the Tesla Semi, a battery electric Class 8 tractor trailer designed to support regional and long-haul services. The Tesla Semi comes in two variants, a 300-mile range version and a 500-mile range version. Tesla recently completed its delivery of 36 of these vehicles (500-range variant) to PepsiCo and they are now in active operation and we are moving forward with expanding our production capacity in Nevada in 2024 to support higher volume production in the future.[7]

The view that BEVs have only in a limited role in supporting goods movement on longer routes will result in underinvestment and/or misaligned investment in electrical charging infrastructure needed to support BEVs engaged in long-haul and heavy freight operations on these corridors, and potentially overinvestment in hydrogen infrastructure. Furthermore, and perhaps more relevant to the IEPR electricity forecasts, Tesla is concerned that embracing the assumption that BEVs have only a limited role to play in heavy duty regional and long haul goods movement will result in a material underestimation of the electrical needs associated with this sector.

[6] "Near-Term Infrastructure Deployment to Support Zero-Emission Medium- and Heavy-Duty Vehicles in the United States"; Pierre-Louis Ragon, Sara Kelly, Nicole Egerstrom, Jerold Brito, Ben Sharpe, Charlie Allcock, Ray Minjares and Felipe Rodríguez; International Council on Clean Transportation; May 2023; https://theicct.org/wp-content/uploads/2023/05/infrastructure-deployment-mhdv-may23.pdf

[7] "Tesla delivers a new fleet of Tesla Semi electric trucks to PepsiCo," by Fred Lambert, *Electrek*, April 12, 2023.

V. Conclusion

Tesla greatly appreciates the opportunity to comment on the Vehicle Forecast presented at the August 18 Workshop on Load Modifier Scenario Development. We thank staff for their hard work and look forward to continued collaboration on the 2023 IEPR.

Sincerely,

/s/ Damon Franz

Damon Franz

Senior Managing Policy Advisor

Tesla