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Auto Innovators Comments on Plug-In Electric Vehicle Charging Infrastructure

Please find the attached comments from The Alliance for Automotive Innovation on the Plug-In Electric Vehicle Charging Infrastructure section of 20-IEPR-02

Additional submitted attachment is included below.



August 27, 2020

Hon. Patricia Monahan
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Docket No. 20-IEPR-02, Comments of the Alliance for Automotive Innovation on the Integrated Energy Policy Report Plug-In Electric Vehicle Charging Infrastructure

Dear Commissioner Monahan:

The Alliance for Automotive Innovation (“Auto Innovators”)¹ thanks the California Energy Commission (CEC) for the opportunity to provide comments on the Plug-In Electric Vehicle Charging Infrastructure portion of the Integrated Energy Policy Report (IEPR).

Auto Innovators represents automakers that collectively produce over 99% of the new cars and light trucks sold in the United States, tier one original equipment suppliers, and technology and other automotive companies. Auto Innovators is committed to supporting and implementing policies and programs that help support transportation electrification, including battery electric, plug-in hybrid, and hydrogen fuel cell technologies.

This is a pivotal point in the development of the electric vehicle (EV) market. Today, there are 48 electric models offered²—more than any point in history. Moreover, every major automaker has announced plans to increase the number of electrified platforms. In the next five years, automakers intend to offer over 100 different EV models in a variety of market segments.³ However, automotive industry investments alone are not enough to ensure increased market penetration for electrified vehicles. Increasing customer demand for EVs is necessary, and time and time again studies have

¹ Formed in 2020, the Alliance for Automotive Innovation is the singular, authoritative, and respected voice of the automotive industry. Focused on creating a safe and transformative path for sustainable industry growth, the Alliance for Automotive Innovation represents the manufacturers producing nearly 99 percent of cars and light trucks sold in the U.S. The newly established organization, a combination of the Association of Global Automakers and the Alliance of Automobile Manufacturers, is directly involved in regulatory and policy matters impacting the light-duty vehicle market across the country.

² *Veloz Sales Dashboard*, Veloz, <https://www.veloz.org/sales-dashboard/> (data retrieved 2/28/20)

³ <https://www.autonews.com/article/20181001/OEM04/181009990/nearly-100-electrified-models-slated-to-arrive-through-2022>

shown that purchase incentives and available charging/refueling infrastructure are key parameters to increasing customer demand. We see the IEPR activity as vitally important in making sure that infrastructure and vehicle targets are well-aligned.

Infrastructure and vehicle targets must be aligned.

Auto Innovators appreciates the updates that are being made to the Electric Vehicle Infrastructure Projection Tool (EVI-Pro) assumptions.⁴ These changes better align with market realities for BEV/PHEV split, range, and home charging, but we fully expect that these assumptions will need to evolve with the EV market.

	EVI-Pro 1 (2025)	EVI-Pro 2 (2030)
Zero emission vehicles	1.5M	5.0M
Charging Behavior Objective	Maximize eVMT	Mirror observed behavior
PHEV/BEV Split	45%/55%	32%/68%
Avg BEV Range	210 miles	280 miles
PEVs w/ home charging	92%	82%
Infrastructure utilization	Assumed	Observed
Long-distance travel	No	Simulated (EVI-Pro RoadTrip)*
Transportation network companies	No	Simulated (UC Davis' WIRED)*
Medium/heavy-duty vehicles	No	Simulated (LBNL's HEVI-Pro)*

**To be shown in subsequent presentations*

Figure 1 Assumption updates from EVI-Pro 1 to EVI-Pro 2

As California has adjusted its EV targets from 1.5M in 2025 to 5.0M in 2030, it is important to understand what infrastructure will be needed if the state has a chance of meeting these targets. We commend CEC for adjusting the EVI-Pro model to incorporate this increase of EVs; however, it quickly becomes clear that the number-of-vehicles assumption will need to be updated to align with California Air Resources Board (CARB) targets. As CARB’s presentation at the August 6, 2020 CEC AB 2127

⁴ NREL presentation at IEPR workshop, August 6, 2020, <https://efiling.energy.ca.gov/GetDocument.aspx?tn=234215&DocumentContentId=67051>

workshop shows, CARB is targeting 100% of light-duty sales to be ZEVs and PHEVs by 2035.⁵ This ambitious goal will inevitably require a significantly higher number of EV chargers.

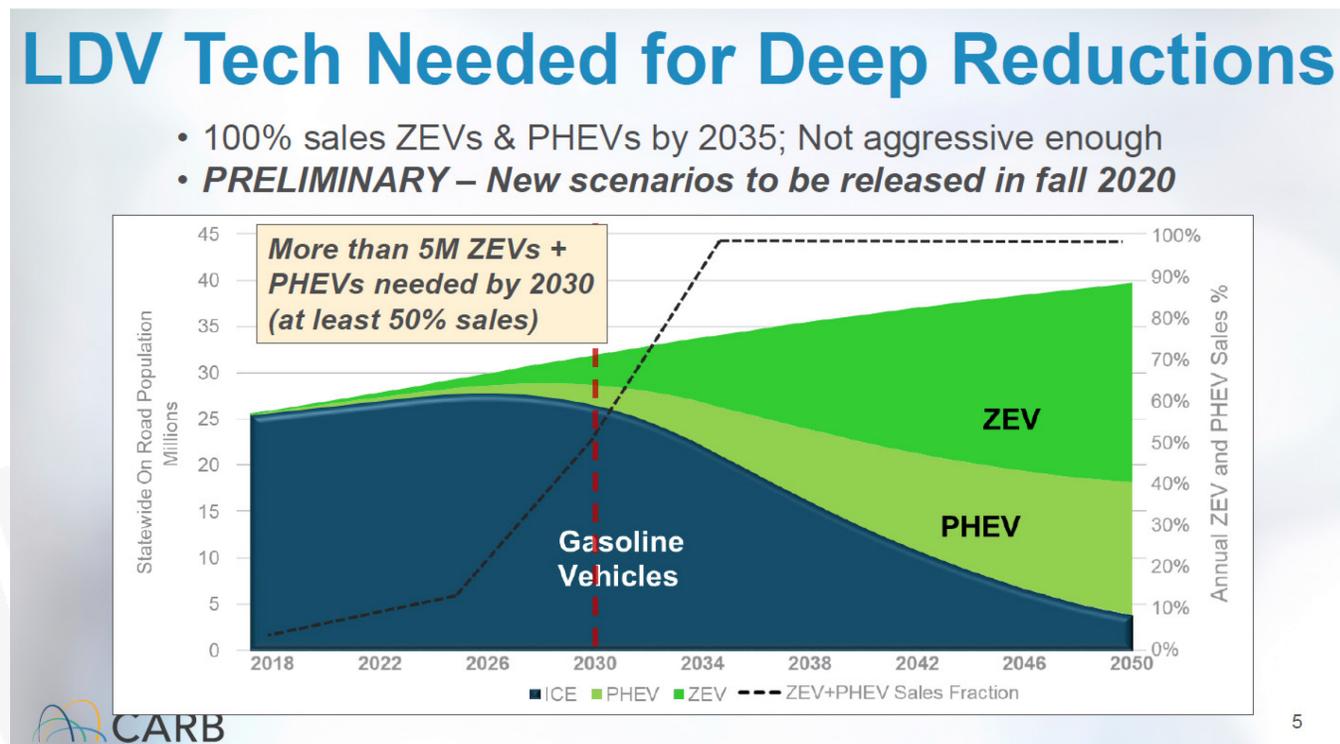


Figure 2 CARB Assumptions for Deep GHG Reductions in the LDV Sector

As the EV and charging industries continue to grow, and EV consumers evolve, we will learn more about charging patterns and preferences. Having the flexibility to adjust the EVI-Pro model will become even more critical to ensure that the right number and types of chargers are available for all consumers and potential consumers. If it would be helpful, Auto Innovators stands ready to support the CEC in updating assumptions and the modeling to align EV and infrastructure targets. Additionally, EVI-Pro produces helpful data about an ideal number of charging stations, but it may overlook real-world considerations around station locations, utilization, and financial viability. We recommend that the CEC consider these issues to provide a more complete picture of the infrastructure gap and the ongoing need for incentives to support stations that do not have a near-term path to economic viability.

⁵ CARB presentation to CEC AB 2127 Workshop, August 6, 2020, <https://efiling.energy.ca.gov/GetDocument.aspx?tn=234240&DocumentContentId=67085>

One key issue that should be addressed as CEC and NREL work to update the needs analysis is the question of DC fast charge connector interoperability. The analysis appears to assume perfect interoperability between vehicles and chargers, when in reality the market is fragmented with vehicles designed around different DCFC connectors: SAE CCS, CHAdeMO, and Tesla. For example, while California has over 4,500 DCFC outlets today, the actual number of chargers that any given driver can use is only about one-third of this, depending on the vehicle they drive (approximately 1,700 for models compatible with CCS, and approximately 1,500 for models compatible with CHAdeMO).⁶ This suggests that the charging “gap” for DCFC is larger than it appears. We recommend accounting for this in the needs analysis and future projections.

Vehicle Grid Integration communication protocols need to be flexible.

Ever increasing numbers of electrified vehicle platforms will be entering the market in the near future, but at this stage the EV market remains very much nascent. Because the market is still growing and more models with different connected and “smart” technologies will be employed to create exciting and useful innovations for the customer, it is imperative that mandates do not hinder new market development.

IEEE 2030.5 (using telematics, WiFi, or PLC), OpenADR2 (using telematics or Wi-Fi), Open Charge Point Protocol (OCPP), and ISO 15118 (using Wi-Fi or PLC) are standard protocols that can enable important Vehicle Grid Integration (VGI) functions and use cases; these should not be looked upon as a single solution for communications between the EV and the charger. Mandating a specific communication protocol, or path, at this stage of the EV market has the potential to add cost to the vehicle and/or charger. A specific protocol can lock out early models of EVs from utilizing newer stations. Additionally, the industry is working to enhance known vulnerabilities in existing standards to improve security and performance. Instead of proposing a mandate, we recommend that California allow the EV and EVSE industries to evolve and determine the communication protocol that makes the most sense for the customer. We agree with the 2017 California Public Utilities Commission VGI Communication Protocols Working Group Report which stated, “markets, protocols, and technology are

⁶ https://afdc.energy.gov/stations/#/analyze?region=US-CA&country=US&fuel=ELEC&ev_levels=dc_fast

rapidly developing and at this time we do not want to preclude any protocols or use cases that can deliver VGI value.”⁷

Development of VGI Rate Structure

Ultimately, the realization of benefits from grid connected vehicles will be determined by available utility rate structures. As demonstrations of intelligent dispatch of vehicles proceed, evaluations of the effectiveness of vehicle populations will yield data supporting quantifiable benefits that VGI-enabled vehicles can provide. As described in the interoperability discussion above, this dispatch will occur over several communication pathways, each offering unique opportunities for grid support and ISO market participation. With this diversity in dispatch methods, and building on time-varying forecasts and situational awareness, varying degrees of intelligence will be provided across the VGI stakeholder continuum – from utilities, EVSPs, automakers, and opt-in preferences from end users.

Building on learnings from these demonstrations, some of which have already produced rich data, such as the CEC-funded University of California – San Diego research report *Distribution System Constrained Vehicle-to-Grid Services for Improved Grid Stability and Reliability*,⁸ the ability for California to lead the development of VGI rates will assure methods of services-based remuneration of EVSPs and end users. These VGI rates will additionally ensure that California’s goals for vehicle adoption and infrastructure roll-outs are backed by financial mechanisms that can be used to assure sustained success of the programs that IOUs will be including in their Transportation Electrification Planning activities. The impact of these programs upon present and future IEPR proceedings is critical to the State’s grid planning activities.

Continued funding will be critical for increased infrastructure deployment.

Given the charging infrastructure gap identified in the CEC/NREL analysis, it is clear that continued state support will be crucial for infrastructure deployment. Auto Innovators appreciates CEC’s creative thinking on new approaches such as the TERPA concept. However, we also want to stress the need in the near-term to prioritize CEC’s existing infrastructure deployment programs:

⁷ VGI Communication Protocol Working Group Energy Division Staff Report, October 2018, <https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442460144> at 18.

⁸ <https://ww2.energy.ca.gov/2019publications/CEC-500-2019-027/CEC-500-2019-027.pdf>

CALeVIP for EV charging and AB 8 for hydrogen. Both programs should be fully funded, and both need continual updating to ensure smooth operation and to account for technological innovation and lessons learned.

Conclusion

Auto Innovators appreciates the opportunity to provide these comments on the CEC IEPR Plug-In Electric Vehicle Charging Infrastructure. The CEC IEPR is used by multiple California agencies to identify EV and charging needs; therefore, it is imperative that the information in the report is up-to-date and accurate. We commend the CEC in continuing the development of the IEPR and accepting stakeholder comments. Auto Innovators looks forward to working with the CEC and other stakeholders throughout the IEPR process.

Respectfully submitted,



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