DOCKETED	
Docket Number:	19-AB-2127
Project Title:	Implementation of AB 2127 Electric Vehicle Charging Infrastructure Assessments
TN #:	252505
Document Title:	Dan Bowerson Comments - Comments of Alliance for Automotive Innovation on Draft AB 2127 Report
Description:	N/A
Filer:	System
Organization:	Dan Bowerson
Submitter Role:	Public
Submission Date:	10/4/2023 6:17:33 PM
Docketed Date:	10/5/2023

Comment Received From: Dan Bowerson
Submitted On: 10/4/2023
Docket Number: 19-AB-2127

Comments of Alliance for Automotive Innovation on Draft AB 2127 Report

Additional submitted attachment is included below.

October 5, 2023

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

Re: Assembly Bill 2127 Electric Vehicle Charging Infrastructure Second Assessment Staff Draft Report

Dear Commissioner Monahan:

The Alliance for Automotive Innovation ("Auto Innovators")[1] appreciates this opportunity to comment on the *Assembly Bill 2127 Electric Vehicle Charging Infrastructure Second Assessment Staff Draft Report* (the "Draft Report"). We commend the CEC for a thorough and thoughtful analysis that projects charging infrastructure needs under a range of scenarios and addresses necessary Vehicle Grid Integration and Workforce Development initiatives. Below we identify points of agreement and offer suggestions on how to strengthen the Final Report, beginning with the Charging Needs Assessment and then turning to the discussion of VGI Advancement Areas.

Charging Needs: Assumptions/Scenarios/Conclusions (Chapters 4 & 5)

We greatly appreciate CEC's thoughtful analysis and stakeholder engagement in developing an updated charging infrastructure needs assessment. California is moving quickly toward an all-electric future, and it is increasingly clear that the most crucial opportunities and challenges for this transition are related to charging infrastructure deployment –meeting customer needs by deploying the right charging solutions in the best possible locations and doing so at a pace that enables the state to meet its electrification-related goals.

The updated analysis improves upon the original AB 2127 report by leveraging updated assumptions and lessons learned about the rapidly evolving EV market. We generally support the analysis and

[1] From the manufacturers producing most vehicles sold in the U.S. to autonomous vehicle innovators to equipment suppliers, battery producers and semiconductor makers – Alliance for Automotive Innovation represents the full auto industry, a sector supporting 10 million American jobs and five percent of the economy. Active in Washington, D.C. and all 50 states, the association is committed to a cleaner, safer and smarter personal transportation future. www.autosinnovate.org.

conclusions around light duty charging infrastructure needs and outstanding challenges, particularly as we move beyond early adopters with relatively easy home charging access. Our primary concern at this point is around the pace of infrastructure deployment required to meet state goals, and we appreciate the steps that the state is taking to proactively accelerate and scale deployment. Below, we outline specific automaker and customer perspectives on infrastructure needs, priorities, and challenges.

A holistic and thoughtfully designed charging ecosystem is needed to meet California's electrification goals. CEC rightly calls out multiple high-priority charging location types: home, work, and public with a mix of Level 2 (L2) and Direct Current Fast Charging (DCFC). We continue to see a need to expand charging across all of these market segments, though it is important to get the charging "right" in each case to maximize the impact and efficiently use scarce resources.

- **Home charging remains the most cost-effective and convenient option, whenever possible.** Most charging today is done at home, and the EV market is still dominated by drivers with home charging access. We therefore recommend continued focus on expanding access to charging at home wherever possible, including multi-family housing and older construction that may require panel upgrades. Even with targeted efforts to expand access, we agree with CEC that the percentage of drivers with easy home charging access is likely to drop as the market expands to new market segments and we appreciate the acknowledgement of this challenge in the home charging assumptions.[2]

- **Strategically located public and workplace L2 are important parts of the network.** Much of the public charging discussion is currently focused on DCFC. However, we still see an important role for L2 chargers in the right locations: spots with longer dwell times (including but not limited to workplace) and key destinations that may fall out of daily travel patterns (hotels, parks, etc.). In the right locations, these chargers can boost customer confidence and provide grid benefits at lower cost than DCFC deployment. There is also discussion in the report of "near- home" L2 as a possible solution for would-be drivers without home access. While this

[2] CEC's assumption of 78% in 2025, possibly falling to 60% in 2035, appropriately recognizes the diversity of housing stock across the state and the need to look beyond "low-hanging fruit" to expand EV access and achieve equity goals. Many recent analyses assume relatively high levels of home access that implicitly discount equity considerations and reduce estimates for public charging needs.

deserves further analysis, we urge caution and careful debate around key customer considerations such as safety and convenience. Customers cannot realistically be expected to park far from home, particularly in bad weather or areas with safety concerns (e.g., lack of adequate lighting).

- **High-power DCFC will be an increasingly critical enabler for market growth and utilization.** We support the focus in this report on DCFC and appreciate that the updated report calls for greater DCFC penetration than the initial AB 2127 report. We also agree that demand will shift toward higher speed DCFC as vehicle technology improves, which is why we've been calling for a focus on high-power (350kW+) DCFC for corridor chargers in particular. While it is too early to make definitive claims about the future market, particularly for those without home access, there is reason to believe that DCFC will make up a growing share of overall charging as more capable EVs hit the market and customers use them for more of their travel needs (e.g., long-distance travel, towing, etc.). DCFC can also provide a solution, particularly in the near-term, for those without home charging access.[3] And some medium-duty vehicles (e.g., large pickups and vans) might be expected to use these same DCFC sites, particularly as some of these fleets send vehicles home with drivers.

While we see DCFC playing an increasingly important role over the next several years and many Auto Innovators member companies are directly investing in DCFC deployment, most credible third-party analyses continue to call for a holistic approach to charging that also includes strategically located L2. We therefore think it may be premature to adopt the full "gas station model" at this point as there are many compelling reasons – from customer convenience, to cost, to grid integration – to expand home and workplace charging access.

We have concerns about the pace of infrastructure deployment. We were pleased to see California hit the 10,000 DCFC milestone in late September and applaud CEC and the state for investments and related efforts to date. However, deployment timelines are long, and we see a potential for increasing delays as deployment ramps up statewide.

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[3] See, for example, J.R. DeShazo and James Di Filippo, Evaluating Multi-Unit Resident Charging Behavior at Direct Charging Behavior at Direct Current Fast Chargers, Feb. 2021.

Challenges exist in all market segments. For L2 residential, we agree that "Legacy electrical panels used at older buildings typically have lower current ratings and few breaker slots, and often cannot easily accommodate an EV charger or other additional loads," and encourage continued discussion around panel upgrades, particularly as we look ahead to bidirectional charging. Despite years of discussion and focused effort, retrofit solutions for multi-family housing (essential for equitable electrification) remain expensive and we are not yet seeing wide-scale deployment. Building codes are a necessary and helpful step for new construction; existing buildings require continued focus. Workplace and destination L2 chargers are being slowly deployed, but there is a long way to go to hit the CEC's proposed targets. Challenges are exacerbated at DCFC sites, where utility upgrades, related supply chain constraints, and permitting delays can create uncertainty and add months (or years) to project timelines. These DCFC-specific hurdles are likely to grow as sites become larger and continue to strain local distribution grids.

Continued funding and policy support are needed for both DCFC and L2. We appreciate CEC's analysis of charging needs as well as the acknowledgment of the challenges outlined above. We applaud California for steps taken to date to facilitate light duty EV charging infrastructure deployment and look forward to continued collaboration. Below, we discuss additional steps that will be needed to meet the goals outlined in this report.

- **CEC funding** will continue to play an important role in accelerating charging infrastructure across all priority light duty market segments, including both L2 and DCFC. There have been multiple recent industry announcements – including some from Auto Innovators members – around DCFC deployment and this has led policymakers in some states to ask whether public funding is still needed. It is. The business case for fast charging remains challenging, particularly given the need to build ahead of the market, and public funding is needed to accelerate widespread, large-scale deployment. L2 charging is also lagging, and CEC is well-positioned to catalyze private investment in strategic, long-dwell locations.

- **Planning and proactive grid investment** are essential to timely infrastructure buildout as the market accelerates. We appreciate CEC's ongoing efforts to model scenarios with higher EV adoption and encourage continued discussion around policy and regulatory changes needed to

enable proactive upgrades. Utility engagement is essential here, and Auto Innovators will continue to work with utilities across the state to find solutions.

- **Energization timelines** have become a major topic of conversation over the past year. We applaud CEC for focusing on this topic in the 2023 Integrated Energy Policy Report (IEPR) and look forward to continued collaboration on creative solutions to this issue.

- **Permitting** remains a challenge at the local level despite past legislation intended to streamline local processes. We appreciate ongoing efforts by CEC and GO-Biz to educate stakeholders and encourage streamlined processes.

- **EV-Ready building codes** are a no-regrets policy that can expand charging access at a fraction of the cost of future retrofits. However, existing buildings still present challenges that will require a suite of policy tools as outlined above.

- **Customer experience**: There is still work to do around charger reliability and customer experience and Auto Innovators members are focusing on these issues across the charging ecosystem. CEC is well-positioned to help enable progress on some of these topics through direct investments, incentive program requirements, etc. We look forward to continued engagement with CEC staff on reliability and reporting requirements and related efforts.

Advancing Vehicle Grid Integration (Chapter 6)

Auto Innovators commends the CEC for laying out a framework to realize Widespread VGI. Overall, the Draft Report's framework is consistent with Auto Innovators' vision for VGI, as expressed in our EV Infrastructure Guiding Principles.[4] Auto Innovators believes that a range of optional VGI rates and programs should be available to all EV drivers; effective marketing, education and outreach are crucial to ensure that EV drivers are aware of these opportunities and appreciate the potential bill savings; and there should a variety of inexpensive, hassle-free ways for drivers to access the cost savings they afford.

As the grid decarbonizes flexible loads will play an increasingly important role in maintaining an affordable and reliable electricity supply, which is essential to consumer acceptance of EVs. We concur

[4] https://www.autosinnovate.org/posts/press-release/ev-charging-infrastructure-principles

with the Draft Report's recommendation that **utilities should offer drivers an array of options to provide and be compensated for grid services;** these offerings should include time-varying rates, demand response programs and non-monetary incentives, and there should be both EV-only and whole-house options. Separating out the EV's energy use on drivers' utility bills spotlights the savings that come from shifting charging behavior. As the public's perception of EVs and drivers' charging behavior are still in the formative stages, highlighting these benefits will be crucial in the coming years. Available evidence suggests that TOU rates that apply only to the vehicle (EV-only) are more effective in shifting load than Whole House TOU rates.[5]

Auto Innovators agrees that VGI EV rates and programs need to be "widely available" (p. 77) for EVs to fulfill their potential as flexible resources. **All EV drivers should have the opportunity to leverage their charging flexibility to provide grid services and receive compensation.** However, despite over a decade of VGI pilots and demonstration programs, California still lacks a robust menu mass market offerings for EV drivers. Enrollment is capped at a few thousand or even a few hundred customers for most rates and programs available to drivers today. The peak/off-peak ratio is modest on the IOUs' default TOU offerings, and relatively few drivers have opted into the IOUs' more steeply differentiated TOU rates for customers with DERs (e.g. SCE's TOU-D-Prime).[6] Looking ahead, the EV programs proposed in the IOUs pending Demand Response proposals are also modest in scale. SCE and SDG&E state that they will propose full scale programs in 2026 and 2028 respectively, if their pilots are successful.[7] Given the CPUC's lengthy review process for the IOUs' DR portfolios, it seems unlikely that more than a small fraction of the CEC's projected 7.1 million EVs in 2023 will be participating in VGI programs. This is not consistent with the EVI-Pro-3 assumption that LDV's TOU participation will reach 50% by 2025 and 100% by 2030 (p. 41).

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[5] P. Cappers, et. al., Snapshot of EV-Specific Rate Designs Among U.S. Investor-Owned Electric Utilities, Lawrence Berkeley National Laboratory, April, 2023

[6] For example, SCE states in the IOUs' 2023 EV Load Research Report that "Based on the number of PEVs SCE estimates are within its service territory, the majority of PEV owners chose to remain on the domestic rate plan." Joint IOU Electric Vehicle Load Research and Charging Infrastructure Cost Report and EV Infrastructure Rule Data 11th Report, Filed on March 31, 2023 (p. 49).

[7] Southern California Edison Company's Testimony in Support of Its Application for Approval of 2023–2027 Demand Response Programs: Exhibit 3 – SCE's 2023–2027 Proposed Demand Response Programs By Category (filed at the CPUC in A.22-05-004) and Opening Brief of San Diego Gas & Electric Company on Phase II – Demand Response Portfolio for Program Years 2024-2027 (filed at the CPUC in A.22-05-002).

Also, these rates and programs should enable a variety of business models to ensure that a dynamic and competitive industry develops around administering and/or enabling drivers' participation.

Auto Innovators agrees with the Draft Report's finding that drivers should have "access to a range of affordable, interoperable VGI products and services" (p. 77). Given that insufficient electrical capacity in many existing buildings limits opportunities for Level 2 charging, and that many drivers can meet their regular driving needs without a networked L2 charger, VGI rates and programs must meet drivers where they are. CARB's inclusion of a Convenience Cord requirement in the ACC II rule is an example of this: adopted with low- and moderate-income purchasers of second-hand EVs in mind, it aims to enable as many drivers as possible to charge at or close to L2, without having to install a L2 charger.[8] The stationary submetering protocol adopted by the CPUC in 2022 enables customers with networked L2 chargers to participate in EV-only rates and programs. Drivers who elect not to install a networked L2 charger should also have opportunities to be compensated for providing valuable grid services. Mobile submetering, which utilizes the telematics systems available on almost all EVs, provides a low-cost, low-friction means for other drivers to participate in them. Developing a mobile submetering protocol will significantly expand the customer base for EV rates and programs.

Telematics-based charge management and metering are already more than the "possibility" described on p. 82 of the Draft Report. Most EVs available today have sophisticated systems of sensors, microprocessors, and communications capabilities that may be used for these purposes. Utilities in several states, including New York, Michigan, and Maryland, as well as PG&E and several California CCAs, currently offer programs that use telematics systems to manage charging—at home and away. New York's investor-owned utilities are developing a method to assess the accuracy of telematics-based metering for subtractive billing and Duke Progress Energy and Duke Energy Carolinas are evaluating telematics-based submetering as part of a subscription rate pilot: if the pilot is successful, Duke intends to use telematics based submetering as an alternative to a second, dedicated utility meter for the EV.[9]

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[8] California Air Resources Board, Public Hearing to Consider the Proposed Advanced Clean Cars II Regulations, Staff Report: Initial Statement of Reasons, Released April 12, 2022, pp. 49-53.

[9] Duke Energy Carolinas, LLC's and Duke Energy Progress, LLC's Application for Approval of Electric Vehicle Managed Charging Pilots, filed with North Carolina Utilities Commission, Feb. 11, 2022, Docket Nos. E-7, Sub 1266 and E-2, Sub 1291.

The Draft Report should be updated to include a discussion of material presented at the CPUC telematics workshop held on July 24, 2023 (see Footnote 116 on p. 81). Notably, OEMs and aggregators presented findings from their efforts to assess the accuracy of telematics data and identified issues that should be addressed in standards for mobile submetering. Capabilities of different OEMs' telematics systems vary, but setting technology-neutral standards will enable individual OEMs to assess the business case for investing in capabilities that would support mobile submetering (and drivers' abilities to receive compensation for providing grid services). Also, while residential charging probably is the strongest use case for telematics-based load management and metering, the Draft Report understates the ability of telematics to support VGI in other settings and to respond to dynamic rates and grid signals. OEMs and third parties alike have developed platforms that can integrate vehicle data with grid signals in order to optimize delivery of grid services while meeting drivers' transportation needs; for example, BMW's Charge Now pilot successfully demonstrated charge optimization across time and locations.[10]

In addition to offering a broad menu of VGI rates and programs and expanding ways to participate in them, utilities should work with 3rd parties including OEMs to increase and enhance customer outreach and education.

Finally, Auto Innovators commends the CEC for its crucial role in informing planning and financing processes at the CPUC and CAISO through its AB2127 and IEPR reports. We appreciate the CEC's support for the CPUC's IRP and DRP and the CAISO's TPP processes and its effort to harmonize forecasts and assumptions underpinning planning for system needs. The CEC's inaugural effort—in the IEPR—to quantify a target for load shifting to reduce net peak demand (pursuant to SB 846) is a vitally important initiative. However, the target will only be meaningful if there is a credible plan and a concerted effort to meet it. At present, both are absent. Auto Innovators supported the proposal in the CPUC's Draft Transportation Electrification Plan to develop an EV Rate Evolution Plan and was disappointed that it was not included in the final decision in the DRIVE rulemaking (R.18-12-006). The CPUC is currently approaching flexibility incentives in a piecemeal fashion, with various strategies being developed in the Rate Flexibility, Demand Response, DER and EV dockets. The CEC is well-

[10] Lipman, T., et. al., 2021, Total Charge Management of Electric Vehicles, Final Project Report, Energy Research and Development Division, California Energy Commission, CEC-500-2021-055.

positioned to remedy this gap by laying out a holistic vision of how load-shifting from EV charging will grow over time and the breadth of programs/rate offerings, and level of customer participation to needed to realize this goal.

In closing, Auto Innovators thanks the CEC for its work on the Draft Report and looks forward to the final product.

Sincerely,

Dan Bowerson

Senior Director, Energy & Environment