



Comments of the Vehicle-Grid Integration Council (VGIC)

on

VGI and Charging Funding

to

the California Energy Commission (CEC)

Docket # 20-IEPR-02

2020 Integrated Energy Policy Report Update

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A. Introduction

The Vehicle-Grid Integration Council¹ (“VGIC”), a 501(c)6 membership-based advocacy group, is pleased to provide comments in response to the California Energy Commission (CEC) *2020 Integrated Energy Policy Report Update* (Docket 20-IEPR-01, “2020 IEPR Update”) and with regard to its focus on Transportation (20-IEPR-02).

VGIC is committed to advancing the role of electric vehicles (“EVs”) and vehicle-grid integration (“VGI”) through policy development, education, outreach, and research. VGIC supports the transition to decarbonized transportation and electric sectors by ensuring the value from EV deployments and flexible EV charging and discharging is recognized and compensated in support of achieving a more reliable, affordable, and efficient electric grid.

The energy system today is undergoing a significant transformation, including high penetration of renewable energy resources and expanded use of EVs. This transformation to an affordable, clean energy economy for everyone requires implementing VGI strategies to accomplish five key public policy goals:

- Decarbonize the transportation sector by accelerating EV adoption
- Support the decarbonizing power sector by providing essential grid services as renewable energy penetration increases
- Increase affordability by reducing electricity bills for all customers
- Improve grid resiliency and security during wildfire risk events
- Foster economic activity through innovation, competition, and market transformation

Creating pathways for scaling VGI, *or the shift or modulation in charging or discharging time, level, or location in support of achieving a more reliable, affordable, decarbonized, and*

¹ VGIC member companies and supporters include American Honda Motor Co., Inc., Connect California LLC, Enel X North America, Inc., Fiat Chrysler Automobiles, Ford Motor Company, General Motors Company, Nissan North America, Inc., Nuvve Corporation, and Toyota Motor North America, Inc. The views expressed in these Comments are those of VGIC, and do not necessarily reflect the views of all of the individual VGIC member companies or supporters. (<https://www.vgicouncil.org/>).

efficient electric grid, can provide a cornerstone in support of each of these public policy goals. Critically, expanded VGI deployment will also promote job creation to support California’s recovery from the economic impacts of COVID-19.

VGIC appreciates the Commission’s exploration of VGI during the 2020 IEPR Update, as we believe meaningful opportunities to scale VGI technologies and business models are available, and the Commission should be informed and updated on the current state of the VGI market. VGIC’s comments below address specific economic and operational barriers to scaling VGI and provide several recommendations for consideration in the 2020 IEPR Update.

B. In Order to Engage Customers, Accessible Value Streams are Needed

Presently, 320 VGI Use Cases can be applied across many sectors, as identified in the interagency VGI Working Group Final Report.² However, the full potential value of VGI services cannot currently be realized. Critically, customers must be able to realize some of the benefits of VGI in order to want to participate in VGI rates and programs. Similarly, automotive original equipment manufacturers (“OEMs”), EV service providers (“EVSP”), and their customers will need to receive compensation to offset the costs of these new technologies and to attract and retain customer participation. VGIC believes addressing three key barriers could support accessible value streams and result in scaled implementation of VGI. First, there is a lack of adequate compensation mechanisms and supporting programs for VGI services. Second, vehicle-to-grid (“V2G”) technologies cannot achieve commercial scale or access available markets under current interconnection processes. Third, onerous state-level standards and regulations are stalling deployment of existing VGI technology. Moreover, state-imposed requirements to implement immature communications protocols impede the ability to address powerful customer-friendly and industry-prioritized VGI strategies. Together, these barriers effectively limit the value which customers can derive from their EV – whether through reduced charging costs, additional revenue for VGI services, new value propositions (e.g. backup power) or a combination of these – and constrain the promising societal benefits widespread VGI has to

² See VGI WG Final Report, filed in California Public Utilities Commission Rulemaking 18-12-006 on June 30, 2020 at 8. <https://gridworks.org/wp-content/uploads/2020/07/VGI-Working-Group-Final-Report-6.30.20.pdf>

offer, such as reduced electricity rates, reduced GHG emissions and criteria pollutants, improved grid resiliency, and critical grid support services necessitated by the increased penetration renewables.

Scaling VGI requires adequate compensation mechanisms and supporting programs

Using the work product from the VGI Working Group to inform areas of focus, California should develop a portfolio of compensation mechanisms and supportive customer programs as it seeks to scale VGI. One potential component of this portfolio approach could be the expanded implementation of VGI-specific rate options, for example through continued improvements to existing EV TOU rates, more dynamic rate structures like San Diego Gas & Electric's Power Your Drive VGI Rate, and/or development of more dynamic commercial demand charge constructs. Other levers could include tariff-based approaches for deferring distribution upgrades, utility VGI programs, V2G export credits, and compensation for ancillary services. Scaling VGI requires amplified support for new and existing programs, such as those administered by load serving entities to promote VGI. For example, accelerated focus on robust customer education and outreach programs are necessary to increase VGI awareness, which is currently lagging behind where it must be to achieve not only scaled VGI, but also broader transportation electrification and decarbonization goals. VGIC believes an all-of-the-above approach should be taken to consider how public funds could be used to incentivize "first adopter" customer participation in VGI programs, which has a direct influence on achieving greater scale and adoption of VGI strategies in California.

Of specific interest to California's efforts to implement microgrids and resiliency strategies, one promising, near-term VGI application is the use of EVs to provide backup power during Public Safety Power Shutoffs (PSPS). Enabling EVs as an affordable and clean alternative to conventional fossil-fueled backup power solutions is already technically feasible, but additional policy support is critical to scaling this solution. Funding to accelerate demonstration and pilot programs for EVs as backup power has significant potential to aid California in helping prepare vulnerable communities for power shutoffs in advance of the 2020 and 2021 fire seasons. VGIC believes these efforts could potentially be supported through

existing public funds administered by the Commission, but would also need to be distributed on an expedited basis. VGIC respectfully recommends the Commission explore opportunities to support VGI grid resiliency pilot and demonstration projects with existing funds.

Unlocking V2G value requires improvements to existing utility interconnection pathways

V2G technology has been tested several times in California for technical feasibility, economic viability, and operational considerations.³ Stakeholders of a recent working group on utility interconnection agreed that V2G Direct Current (“V2G DC”) configurations, wherein the inverter is placed inside the EV supply equipment (“EVSE”) and remains stationary, can interconnect under Rule 21.⁴ While existing EV models with bidirectional capabilities (specifically the Nissan Leaf) have already been widely deployed at scale in California and could provide grid services through a V2G DC configuration, improvements to Rule 21 which will enable permitting of these existing opportunities must occur, along with the streamlining of interconnection processes which are needed to ensure a viable pathway for residential and C&I customers seeking to install a V2G DC configuration.

V2G Alternating Current (“V2G AC”) configurations, wherein certain inverter functions are enabled by the EVSE and EV, cannot be deployed even in pilots, much less at commercial scale, without updates to existing interconnection processes. This is due to lagging adoption of SAE, UL, IEEE, and NFPA standards, which presently contain misaligned requirements, and limit actionable program development amid regulatory environments in the electricity and transportation sectors. Current interconnection pathways require third party certification which is generally incompatible with typical vehicle manufacturing processes that rely instead upon internal OEM testing protocols. However, alternate interconnection pathways could be developed, including those where a state agencies could play a supportive role in validating internal OEM testing protocols to ensure the safety and reliability of grid connectivity. VGIC details these potential pathways in our January 6, 2020 comments to the CPUC in response to the

³ See, for example, Electric Vehicle Storage Accelerator (EVSA), Intelligent Electric Vehicle Integration (INVENT), Marine Corps Air Station (MCAS) Miramar V2G Microgrid

⁴ *Working Group Three Final Report* June 14, 2019 in R. 17-07-007 at 61.

<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M309/K943/309943907.PDF>

V2G AC Subgroup Report.⁵ VGIC hopes to continue informing and providing an up-to-date understanding of these gaps between the standards development organizations and California's regulatory systems, specifically related to health and safety testing, inspection, and compliance activities.

Underdeveloped standards and State-level requirements for VGI applications pose risks to customer choice and market development

VGIC supports the sharing of control topologies where the EVSE and EV are configured to assure robust VGI functionality. This approach serves to maximize the value of these assets and the well-orchestrated deployment of VGI Use Cases. However, VGIC cautions against overly-prescriptive requirements for specific standards, especially related to communication protocols, as markets, protocols, and technology are still developing at a rapid pace. One such requirement is the Commission's CALeVIP program, which proposed a requirement for EVSE to be compliant with the communication standards ISO 15118 beginning in 2021.⁶ VGIC strongly opposes mandated communication protocols, as requiring the implementation of a single protocol or combination of protocols at this time would pose a significant barrier to customer choice, VGI market development, and broader transportation electrification deployment goals. Different communication protocols enable different business models, and requiring a specific protocol or combination of protocols will limit the overall value of VGI to the state of California.

VGIC recommends the Commission explore levers to promote VGI strategies that are based on best practices in clean energy and transportation policy design. Programs aimed toward accomplishing identified outcomes by incentivizing adoption and use of VGI functionalities and use cases are likely to be far more effective levers to scale VGI than those requiring EVs and EVSE be compliant with specific standards.

⁵ *Comments of the Vehicle-Grid Integration Council on Vehicle to Grid Alternating Current Interconnection Subgroup Report* (January 6, 2020) in R. 18-12-006 at 5-7.

<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M328/K685/328685720.PDF>

⁶ CEC Docket 17-EVI-01 <https://efiling.energy.ca.gov/GetDocument.aspx?tn=230794&DocumentContentId=62410>

July 15, 2020



C. Conclusion

VGIC is focused on the role of VGI to transition our energy systems to a cleaner future. We assert that, with alignment and acceleration in State Agency initiatives, VGI is well-poised to be a critical component of California's clean, reliable energy future and an accelerated the transition to a carbon-free system that benefit everyone.

The VGIC appreciates the leadership of the CEC in addressing this foundational issue in its 2020 IEPR Update.

Respectfully submitted,
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