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CESA's Comments on the Vehicle-Grid Integration Roadmap

Additional submitted attachment is included below.

November 21, 2018

Email to: docket@energy.ca.gov
Docket Number: 18-MISC-04
Subject: VGI Roadmap Update

Re: Comments of the California Energy Storage Alliance (CESA) on the VGI Roadmap Workshops

The California Energy Storage Alliance (CESA) thanks the California Energy Commission (CEC) for the opportunity to provide these comments on the Vehicle-Grid Integration (VGI) Roadmap update. CESA strongly supports the Governor's goals to put at least 5 million zero-emission vehicles (ZEVs) on California roads by 2030 and to install 250,000 electric vehicle (EV) chargers, including 10,000 direct current fast chargers (DCFCs), by 2025, as established by Executive Order B-48-18. In addition, CESA supports the CEC's efforts to update the VGI Roadmap to reflect the Governor's revised goals as well as to consider VGI challenges and opportunities for medium- and heavy-duty vehicles and to incorporate the new statewide goals for 100% renewable and zero-carbon electricity sales by 2045. These updates are critical and smart integration of EVs and EV-related infrastructure play a vital role in advancing the state's decarbonization goals and grid reliability requirements.

The focus of our comments here is on how the roadmap should be updated to enable greater participation of EVs and EV-related infrastructure to support broader grid-related goals as well as to deliver additional value and potential savings to EV customers and ratepayers at large. Specifically, in the Policy and Planning topic area, CESA offers our recommendations on key barriers and gaps around new policy intervention that can advance the widespread deployment and activation of smart, managed charging (V1G) as well as vehicle-to-grid (V2G) technologies to enhance grid reliability and the customer experience. At the same time, CESA also urges the CEC and other state agencies to balance VGI objectives with protecting and enhancing customer experience and value. To achieve the impact as envisioned by the VGI Roadmap through advanced programs and grid services, EV and EVSE deployment needs to reach scale.

2150 Allston Way, Suite 400, Berkeley, CA 94704 | (510) 665-7811 | cesa_regulatory@storagealliance.org

Issue-by-Issue Comments

P1.4: State agency units implementing VGI-related policy measures are independent, yet require improved awareness of related activities. E.g. ZEV and Infrastructure Targets (B-48-18), Utility Transportation Electrification and Integrated Resource Planning (SB 350), CA Energy Demand Forecast and Transportation Energy Demand Forecast (IEPR), CARB Climate Change Scoping Plan and Mobile Source Strategy (Medium and Heavy assessment, Sustainable Freight, Innovative Clean Transit, Advanced Clean Trucks), Research Assessments (EPIC, ARFVTP, CARB Research), Rulemakings (R.13-11-007, Title 20, Rule 21 Interconnection, Open Access, Low Carbon Fuel Standard).

CESA agrees with the goal of this policy issue to better align VGI-related policy measures across the different agencies, which may be tasked with different roles, such as grid planning and investment, technical and technology research, certifications and standards, and grid services. Importantly, a critical coordination point at a high-level is the Integrated Resources Planning (IRP) proceeding (R.16-02-007), which aims to identify the optimal resource mix to achieve the state's decarbonization goals, pursuant to SB 350 and SB 100. The transportation sector will play a big role in decarbonizing the end-use loads, but will also play a key role in enabling other end-use sectors to decarbonizing by supporting the grid integration of renewables through flexible charging of EVs. Though not optimized intrinsically in the RESOLVE model used in the IRP proceeding, flexible EV charging demonstrated similar capabilities as energy storage resources in supporting renewables integration and supported lower-cost means to achieve our greenhouse gas (GHG) goals, such as by reducing the overbuild of renewables.[1] Furthermore, through smart siting and management of EV charging loads (which has ties to P1.5 as well), EVs and EV-related infrastructure should be able to smartly avoid costly upgrades and to support the investor-owned utilities (IOUs) in planning for new EV-related loads. Given this potential, CESA strongly supports the coordination between the California Public Utilities Commission (CPUC) and CEC to refine EV forecasts in the IRP proceeding and to support optimal siting decisions in the Distributed Resources Planning (DRP) proceeding (R.14-08-013) and IOUs' transportation electrification programs, but also to consider how rates, demand response (DR) programs, and California Independent System Operator (CAISO) market participation pathways can enable such flexible, managed charging.

The cross-agency coordination between the CPUC and CEC will also be important in implementing the CEC's Zero Net Energy (ZNE) homes and building standards, which has implications to Rule 21 interconnection and compensation structures (such as DR programs, Net Energy Metering [NEM] tariffs), among other areas. As the CEC sets policies to enable greater deployment of EVs and EV-related infrastructure, the CPUC will need to develop the compensation structures (*e.g.*, whether through rates, tariffs, incentives, or market prices) to incentivize V1G and V2G resources to participate in a manner beneficial to the grid. Without these economic incentives, V1G and V2G capabilities will not be enabled and may not perform as desired. In addition, interconnection and communication standards need to be developed appropriately and reasonably to balance the grid reliability objectives of distribution utilities as well as to ensure efficient and

[1] Proposed Reference System Plan, Attachment A, p. 139.
http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M195/K910/195910807.PDF

non-burdensome costs and time in deploying EVs and EV-related infrastructure. Where reasonable, there may be policy frameworks and approaches used for other distributed energy resources (DERs), such as behind-the-meter (BTM) energy storage, that could be leveraged without re-inventing the wheel, given the state's progressive and sophisticated policy leadership in fostering the market for other DERs. Finally, as customers adopt multiple DERs behind the same meter to manage their customer bills and support decarbonization, cross-agency coordination will be needed to understand if existing policies and programs could be leveraged to incorporate multi-DER adoption (*e.g.*, NEM tariff for rooftop solar and paired storage, Rule 21 interconnection review for non-exporting BTM storage), and to identify where and when new policies, programs, and frameworks may need to be developed.

CESA thus supports this policy action item being included in the roadmap update and recommends that California agencies consider the implications across different proceedings, initiatives, and stakeholders in implementing the actions included in this roadmap.

P 2.1: Utility programs, procurements, and tariffs could be served by the use of EVs as distributed energy and demand response resources, but requirements between utilities and service providers or participants may prevent robust participation in multiple markets.

The activation of EVs and EV-related infrastructure to provide grid services is one of the key opportunities for the state to reliably and efficiently achieve the state's ZEV and decarbonization goals. EVs and EV-related infrastructure have the significant potential to serve as grid assets to support renewables integration through the provision of ancillary services, load consumption during times of overgeneration, deferral of capital upgrades, etc. However, there are a number of barriers faced by EVs and EV-related infrastructure in providing these additional grid services, which are not too dissimilar from some of the challenges faced by other DERs.

First, CESA observes that many DERs provide grid services through DR programs and market participation (*e.g.*, Proxy Demand Resource [PDR] model at the CAISO). Important progress has been made to enable electric vehicle supply equipment (EVSEs) to participate in the CAISO markets through reforms recently approved in the Energy Storage and Distributed Energy Resources (ESDER) Phase 3 Initiative, which approved and authorized sub-metering configurations for EVSEs to better measure their performance during DR events. Continued progress is being made to enable EVs and EVSEs to participate in DR programs as well, such as through the Demand Response Auction Mechanism (DRAM). Further refinements to DR programs and market participation models are needed to enable EV and EVSE to provide grid services as DR resources, including around performance evaluation methodologies and by expanding the PDR Load Shift Resource (PDR-LSR) eligibility to EVSEs. As new load shift products are developed to allow DR resources to be compensated for load consumption during critical overgeneration periods, the market opportunities should continue to grow, especially as the IOUs increasingly require EVSE deployments to also be DR-capable, as evidenced in some of their transportation electrification applications (*e.g.*, see SCE's Charge Ready Phase 2 Application).

Second, a key opportunity for EVs and EVSEs, as well as DERs at large, is the ability to provide multiple grid services. The facilitation of multiple-use applications (MUAs) to not only provide customer services but also multiple grid services increases the utilization of EV-related assets that deliver higher ratepayer value and increase the revenue streams of customers, which may in turn serve to accelerate more cost-effective EV adoption and EVSE deployments. However, barriers exist for MUAs. Given that DR programs and market participation pathways represent the readiest form of grid service provision by EV-related assets at this time, the dual DR program participation prohibitions or limitations represent a critical barrier for these assets to realize such stacked values and revenue streams. EVs and EVSEs that participate in one DR program may be prevented from participating in other DR programs (*e.g.*, Critical Peak Pricing and Demand Response Auction Mechanism) due to these barriers, even as these resources are seeking to provide distinct grid services. Granted, there are challenges that need to be addressed (*e.g.*, scheduling of load in CAISO markets) that come with dual DR program participation, but there are addressable solutions. By enabling MUAs for EV-related assets as well, customers will realize higher value in EV adoption and EVSE suppliers and operators will more cost-effectively be able to deploy their infrastructure.

Third, the provision of grid services from EVs and EVSEs should not just be limited to non-export functions. While there is significant value to be had from serving customer charging needs as well as serving onsite load, there is also additional value that could be provided in taking advantage of the bidirectional export capabilities of V2G systems. Frequency regulation and generation capacity could be provided through V2G systems given the right market participation pathways and appropriate valuation of these capabilities. However, barriers exist for bidirectional BTM DERs, including V2G resources, in participating as a Distributed Energy Resource Provider (DERP) in the Non-Generator Resource (NGR) model. There are requirements for NGR resources for 24x7 market participation (*i.e.*, to always be in the market). Any out-of-market activity (*e.g.*, charging and discharging to manage customer bills) would otherwise incur imbalance charges for any deviation from dispatch schedules, which deters BTM DERs from participating in the CAISO market as DERPs and leading DER providers to be limited to the PDR model. In addition, a net qualifying capacity (NQC) valuation methodology for DERP aggregations currently does not exist, causing DER resources to not be able to realize capacity value and compensation for their bidirectional capabilities and again leading DER providers to focus on participating through the PDR model to realize capacity value where such capacity valuation methodologies exist. Without these market participation pathways, V2G resources are limited in terms of the compensation structures that would pay for such bidirectional capabilities, especially as no CPUC-jurisdictional tariff or program other than NEM provides some sort of compensation mechanism. By creating such enabling programs or tariffs, or by reforming market participation pathways, V2G resources will have a clearer path to deployment and financeability.

Thus, in the VGI roadmap update, consideration should be given to how programs, tariffs, and market participation pathways should be improved to better value smart dispatch and export capabilities of EV-related assets as well as to unlock their MUA potential.

P2.2: Some of the reliability needs of Balancing Authorities could be met by the use of EVs as distributed energy and demand response resources, but uncertain market size and pricing dampens market participant interest.

Related to the barriers faced by EVs and EVSEs in realizing value through procurements, tariffs, programs, and market participation pathways, there is a critical need to send clear market signals to customers and industry that the state is committed to its ZEV goals and to enable the smart operationalization of EV-related assets. In many ways, the state's agencies have conveyed that signal through its commitment in funds to deploy EVs and EVSEs, but there may be uncertainty around the market size and pricing of grid services that could be provided by operationalizing EVs and EVSEs due to the barriers highlighted on P2.1. A commitment to addressing the aforementioned barriers as well as IRP planning to include EVs and EVSEs in the optimal resource mix would address some of these uncertainty concerns.

P3.2 The traditional "rate of return" regulatory designs may cause utilities to underestimate the grid impact mitigation potential from smart charging infrastructure and grid upgrade planning methodologies may need to be updated. Regulatory changes that accommodate and encourage third party aggregation of charging may be needed.

Encouraging third-party aggregation of charging and V2G capabilities represent a key means to address this issue topic area. In addition to addressing the barriers identified in response to P2.1, CESA also recommends considerations in how aggregations can be enabled by reducing potential barriers to their deployment. For example, for V2G systems, which may have Rule 21 interconnection implications, there may need to be consideration on how to support aggregations by conducting interconnection studies, not on each individual BTM unit, but on the aggregation of BTM resources that will be coordinated to provide any given grid service. By subjecting each BTM unit to interconnection processes, it may slow down the deployment of and raise costs for such V2G assets to the degree that these opportunities may not be pursued. A multi-pronged assessment on how to enable third-party aggregation should thus be conducted and efforts should be made to address policy barriers in implementing the state's goal to enable aggregations.

Conclusion

CESA appreciates the opportunity to provide these comments on the VGI roadmap update. CESA finds this roadmapping process as important to provide uniform and coordinated guidance to all of the state's agencies as they move toward achieve the state's decarbonization and ZEV goals. The Energy Storage Roadmap served a similar purpose and was instrumental in making California the largest energy storage market in the country and the world. Similar developments are underway here in California related to ZEVs, but our comments are intended to provide helpful feedback and recommendations to the roadmap to guide how the state can not only deploy EVs and EVSEs but also to use these deployed assets to support grid reliability and further accelerate decarbonization by smartly managing the grid and integrating renewables. By operationalizing these deployed assets, customers can more cost-effectively adopt EVs and citizens of the state will realize greater 'bang for buck' in their ratepayer and taxpayer dollars that went into deploying EV-related infrastructure.

Sincerely,

Jin Noh
Policy Manager
CALIFORNIA ENERGY STORAGE ALLIANCE (CESA)
jnoh@storagealliance.org
510-665-7811 x 109