

May 6, 2020

To: Eric Martinot, Gridworks
Matthew Tisdale, Gridworks
Mac Roche, Gridworks

cc: Vehicle-Grid Integration (VGI) Working Group

Subject: CESA's informal comments for the VGI Working Group

Re: CESA's informal comments on the VGI-DER value comparison questions addressing CPUC Question (c)

Dear Gridworks and VGI Working Group:

The California Energy Storage Alliance (CESA) appreciates the opportunity to participate in the Vehicle-Grid Integration (VGI) Working Group and offer our qualitative responses to the questions posed to the VGI Working Group by Gridworks qualitative questions.

Responses

- 1. The DER comparisons team presented us with a recommended action "Develop hypotheses on how the value of VGI would compare to the value of DERs for the most prominent VGI use-cases." That is, we want to see several example comparisons of specific VGI use cases with the equivalent DER use cases, employing our use case framework (sector, application, approach, type, alignment). And our "hypothesis" could be a qualitative statement or could be something akin to a red-light/yellow-light/green-light designation. Please provide comparison examples to present in the workshop.**

CESA does not believe a comparison between VGI and other distributed energy resources (DERs) will be as useful to the Commission as would a comparison between unmanaged EV charging versus a VGI scenario, involving managed one-way charging (V1G) and bidirectional vehicle-to-home/building (V2X) resources. Much of the VGI value will be discovered or determined based on cost-effectiveness assessments (*i.e.*, usually within technology-specific programs) where benefits exceed costs of the VGI investment or service, or based on cost competitiveness where the relative cost-effectiveness of different resources or bids are ranked (*e.g.*, auctions, competitive solicitations). Whether VGI is more valuable than other DERs based on a qualitative assessment with a red, yellow,

green designation does not seem to be as informative or relevant as compared to making this determination by comparing VGI with its counterfactual (unmanaged EV charging).

Importantly, the state has clear policy objectives to significantly electrify and decarbonize the transportation sector. EV infrastructure buildout and deployment needs to happen to achieve these goals, regardless of whether VGI is more valuable or not as compared to other DERs. Given this overarching objective, CESA views VGI by all reasonable means must be pursued where incremental value can be achieved to further deliver ratepayer cost savings through reduced distribution infrastructure investment, additional greenhouse gas (GHG) emissions savings, and/or additional grid services (which may reduce the new resource build elsewhere). As a result, CESA views the VGI prioritization objective here as focusing the Commission's efforts on the highest value activities and prioritizing them into near-, medium-, and long-term work.

In sum, CESA strongly supports the need and objectives for VGI. It should be pursued to the fullest extent possible through the use of performance-based incentives and without creating challenges to EV/EVSE growth given the need to ensure customer experience and optionality. However, CESA does not believe that this comparison exercise will yield the most helpful outcomes.

- 2. The DER comparisons team also presented us with a recommended action "Provide input on whether and how VGI and other DERs can be compared on use-case basis. In other words, comment on the pros and cons, risks and opportunities, associated with the proposed approach in Recommendations 1 & 2" [given on Page 6 of their slide deck]. Please provide any feedback or ideas for further development.**

A use-case basis to assess the value of VGI may be helpful, but as noted above, CESA does not see much value in making DER comparisons. Importantly, this comparison should be done on an apples-to-apples basis as much as possible.

- 3. Yoshi Hirata from Sumitomo has now shared his Comparisons of VGI with Battery Storage, attached and posted. This also relates to the more general question: What other high-level qualitative comparisons can we make between VGI and DERs, for example on the basis of location, flexibility, size, ownership, type, etc.? Please provide any feedback on this Sumitomo comparison, especially in relation to answering PUC Question (c), and also provide other examples of your own on high-level qualitative comparisons.**

CESA generally agrees with the Sumitomo comparison as being broadly accurate and could advance some key areas of conversation.

- **Location:** CESA agrees that VGI resources are flexible on location, which is one of the key advantages for them, if properly incentivized to locate and charge.
 - **Price:** Rate arbitrage from VGI can be high, but we should also note that there may be EV-specific rates available to such resources. Granted, there are storage-friendly and -specific rates being developed as well (*e.g.*, PG&E Option S), but any value determination based on this should account for rate differences, if technology-specific or policy-oriented rates are applicable.
 - **Application:** CESA agrees that VGI can be lower cost but be usage limited, particularly with driving being the top priority. The comparison of VGI services with stationary storage should be made on an apples-to-apples basis. Including stationary storage capital and fixed costs but not accounting for capital costs associated with the EV, EVSE, and make-ready infrastructure seems to be an unfair comparison. An even playing field may be how VGI compares with DR services from a stationary storage system incentivized by the Self-Generation Incentive Program (SGIP).
 - **Size:** CESA agrees that the capacity of EV batteries and the scope of aggregated EV fleets present a sizable opportunity. For residential homes, the EV battery (*e.g.*, 50-100 kWh) presents an even larger resiliency resource when compared to average residential storage systems (*e.g.*, 14 kWh Powerwall).
 - **Lifetime/contract:** Stationary storage systems can also change with grid conditions in certain situations. This is where a service-level comparison is needed.
4. **The Columbia team provided us with their VGI-DER quantitative cost-benefit analysis for comparing residential V2G, school bus fleet V2G, and home V2H to equivalent DER use cases. Their slide deck is now posted and you can also read the 50-page draft report they submitted specifically for our Working Group. Please consider how we should incorporate this analysis into our answer to PUC Question (c).**

CESA appreciates the cost-benefit analysis of the Columbia team. However, with all due respect to the Columbia team, this report should not be incorporated into the analysis of this question due to the lack of time to fully vet the assumptions and results, or to benchmark them to similar types of studies. For example, without having fully vetted the report, CESA has concerns with the lack of apples-to-apples service-level comparison of stationary storage with VGI (*e.g.*, only the incremental costs of making an EVSE bidirectional is included), which can skew the results. Rather, the Commission should use published or peer-reviewed results to inform the answering of this question, such as those from the national laboratories, stakeholder proceedings, or academic journals.

5. We are posing this question of the Working Group: What is it about VGI that has you focus your time and attention on it? What makes you think it is worth the time, attention, and money (including public funds) that could go into it? Attached and posted is the document Value of VGI Responses 4.29 containing the first two answers we have received from participants. Please submit your answers to this question so that we can review and discuss a combined answer during the workshop. We encourage all Working Group participants to provide answers!

Given the scale and scope of EV infrastructure buildout and deployment, CESA believes there is tremendous value to be had on VGI. The ratepayers are making these sizable investments, so if we need to do this anyways to support the state’s decarbonization goals, we should create every incentive for more value to be realized where possible.

Conclusion

CESA appreciates the opportunity to provide these informal comments and hope these responses are helpful. Please do not hesitate to reach out if you have any follow up questions or would like to discuss further.

Sincerely,

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