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Comments of The Mobility House on the California Energy Commission (CEC) Electric School Bus Bidirectional Infrastructure Fundin

Additional submitted attachment is included below.

THE MOBILITY HOUSE

Comments of The Mobility House on the California Energy Commission (CEC) Electric School Bus Bidirectional Infrastructure Funding Concept workshop

Docket # 19-TRAN-02
MD/HD Zero-Emission Vehicles and Infrastructure

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Introduction

The Mobility House (TMH) is a 12-year-old technology company with 200+ employees based across offices in Silicon Valley, Munich and Zurich and serving customers in over 10 countries. These include leading automotive manufacturers, fleet operators, utilities, and electric vehicle drivers.

TMH's goal is to help create a zero-emission energy and mobility future. The company provides complete charging solutions and has built a technology platform, ChargePilot, that enables reliable and efficient charging of electric vehicle fleets and vehicle-grid integration using intelligent charging, energy management, and storage solutions. ChargePilot has been rolled out at 500+ fleets across Europe and North America including with leading school districts, electric bus operators, delivery service fleets, and on corporate campuses.

We appreciate the opportunity to comment.

Upgrade of electric school buses to include bidirectional capability

The school bus manufacturers are best-positioned to comment on if such a retrofit is possible at all, and if so how it would impact the vehicle warranty. That said, in general an electric vehicle must be designed with hardware and software for bidirectionality from the outset. This proposal would likely involve significant investment and bespoke engineering work, both costs that may exceed the incremental benefit of a single bus becoming bidirectional.

Alternatively, there are school buses designed for bidirectionality that have been sold in California without bidirectional EVSE to facilitate discharge. Those buses can be rendered bidirectional merely by pairing them with an appropriate EVSE for far less than the cost of attempting to retrofit a normal electric school bus. This funding concept may be helpful in incentivizing and reassuring customers with existing buses to try out bidirectionality having

previously demurred, and we urge CEC to consider revisiting previously deployed electric school buses as potential resources.

EVSE Internal Networking Requirement

Further definition of the proposed EVSE networking requirement will be helpful. If the working definition is that the EVSEs should have communications capabilities and be capable of integration into a charging network network, the OCPP requirement should ensure that all EVSEs meet minimum requirements by that definition. On-site control working with OCPP communications at the EVSE level should meet and exceed technical requirements if our interpretation is correct. Indeed, while OCPP facilitates communication with and remote access of all EVSEs in network individually to address and troubleshoot errors, centralized coordination is necessary for optimization. In this type of system, the on-site controller is considered a reliability measure rather than a potential point of failure. For example, Rule 21 requirements for utility communications with smart inverters allow on-site Energy Management Systems to receive and distribute inverter operating parameters and settings to devices behind the Point of Common Coupling. Smart charging and Active Load Management of EVs can and should abide by the same reliability concepts, particularly where inverters are present as they will be in this funding concept.

Though this funding concept focuses on discharge use cases, the first task is of course to charge the buses, and to do so at least cost to the customer. Coordination of a group of chargers, and potentially shifting charging prioritization in case of unexpected trips while abiding by Time-Of-Use rates and minimizing demand charges, requires centralized intelligence and control of the site. Individually networked EVSEs coordinated completely externally via cloud-based, telematics, or other internet communications represent their own point of failure: Should the external server go down, or the internet connection be lost, the individual EVSEs may default to a benign non-communicative mode, but coordination

would cease. On-site logic via hard wired connections allows smart charging and coordination to continue in the absence of external signals, preserving normal operations.

UL 1741 SB certification

V2G inverters in California are subject to various exceptions and exemptions to Rule 21 requirements. For example, V2G inverters interconnection for participation in the ELRP mechanism (which seems to be another potential funding requirement) are exempted from smart inverter requirements and need only certify to UL 1741. Though it appears uncertain whether or not V2G resources benefitting from this funding must actually sign up for ELRP (see next paragraph), recommends that CEC adopt technical requirements consistent with previous CPUC decisions.[1]

Definition of "Capable of responding to ELRP events"

TMH requests clarity on the definition and purpose of the requirement to be "capable" of ELRP response. Assuming this is a bidirectional use case, could simply that interconnection has been completed and "Permission To Operate" obtained by the customer. In the case of intended Emergency Back-Up use, it is possible a customer would choose a system that only allows discharge in case of grid failure and hence requires no interconnection. Such a system would be a "V2X" use case incapable of participating in ELRP.

Alternatively, "Capable" may instead mean an interconnection and signed contract with an aggregator to participate in ELRP's Category A.5 for VGI aggregations. Assuming the purpose behind this requirement is not to guarantee ELRP participation, but rather to ensure that the V2X capability is operationalized and used by the customer, it may make sense instead

[1] Proposed Decision 20-11-003, Attachment 1; Page 19: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M419/K191/419191939.PDF

to require that any revenue stream be accessed. This could mean signing up for one of the dynamic export rates the IOUs are testing rather than the ELRP, and some flexibility on how the V2X capability is exploited may entice more customers to take advantage of the offering.

Conclusion

The Mobility House supports the funding concept generally but hopes CEC will consider adjustments to technical requirements to ensure this funding concept is aligned with existing policies, regulations, and industry technical solutions for VGI and V2G. Taken together this concept along with REDWDS, Municipal EV Fleets and Community Resilience, and Bidirectional Charging Equipment Rebates, present an impressively complete effort to push commercialization of this new technology.

Respectfully Submitted,

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