

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Consider
Alternative-Fueled Vehicle Programs,
Tariffs, and Policies.

Rulemaking R.13-11-007
(Filed November 14, 2013)

**REPLY COMMENTS OF GREENLOTS ON ASSIGNED COMMISSIONER'S
RULING SEEKING COMMENT ON VEHICLE-GRID INTEGRATION
COMMUNICATION PROTOCOL WORKING GROUP ENERGY DIVISION STAFF
REPORT**

In response to the Assigned Commissioner's Ruling of February 23, 2018 filed in this proceeding, Greenlots offers the following reply comments on the Vehicle-Grid Integration (VGI) Report prepared by CPUC Energy Division and State Agency Staff and opening comments by parties.

Greenlots is a leading provider of electric vehicle (EV) charging software and services. The Greenlots network supports a significant percentage of the DC fast charging infrastructure in North America, and is increasingly supporting programs in the workplace and residential Level 2 space. Greenlots' smart charging solutions are built around an open standards-based focus on future-proofing while helping site hosts, utilities, and grid operators manage dynamic electric vehicle charging loads and respond to local and system conditions. Greenlots is a strong advocate for open standards, and is a founding member of the Open Charge Alliance.

Responses to Opening Comments

Several stakeholders echoed a key assumption of the report in their opening comments: that the lack of a uniform communication protocol is not a key barrier to VGI. In contrast, Greenlots firmly believes that the lack of a uniform communication protocol is and will certainly continue to be a barrier to VGI. For example, if automakers choose a proprietary implementation methodology for VGI, that could put significant development and support overhead on EVSE manufacturers and upstream parties, with correspondingly increased costs in both hardware (recognized in the report) and software development (not recognized in the report). Achieving scale under such a model would be both difficult and unnecessarily costly without a consistent set of standards to enable VGI across different types of vehicles (light/medium/heavy duty) and plug types. Greenlots acknowledges that there may exist barriers to VGI outside the charge of the Commission and scope of this working group process and report, but we don't believe this is a valid reason to not make progress on the issues and barriers that are in scope.

A sentiment was expressed by some commenters that progress should not be made towards a standard for VGI and that more studies and pilots should instead be done first to better understand the value of VGI benefits and that conformance to a standard is premature. This viewpoint focuses on choice and optionality for automakers likely at the expense of EV driver choice and optionality and accelerating the market. Currently, automakers have proprietary and closed telematics systems/protocols with varying degrees of maturity and functionality. Unless automakers can support and deploy an open telematics methodology, relying upon automaker telematics as a standard pathway for VGI will likely lead to a significant interoperability challenge, long development cycles and an inconsistent driver experience across vehicle manufacturers. Additionally, it is difficult to imagine the future allocation of ratepayer dollars to

facilitate the development and implementation of this pathway on the part of IOUs in the absence of standardization to keep costs reasonable. Moreover, the CPUC lacks jurisdiction over the features and standards that automakers decide to put in their vehicles. Greenlots contends that many of the issues and uncertainties brought up through the use case and VGI communication pathway process outside of the original scope of this working group need not impair progress that can and should be made now.

This working group and the report it produces should not lose sight of its original aim and scope—the identification of standards to be implemented in EVSE deployed with ratepayer dollars—due to possible market or technological developments elsewhere. While there may be implications for current and future business models, this needs in large part be about protecting ratepayer investments that are going to be made one way or the other.

It should not be lost on the working group that the automakers that have made the greatest progress to date on supporting VGI are aligned on a particular standard for EV-EVSE communication. Indeed, we understand that they have already committed to equipping millions of EVs with VGI capabilities over the next several years using this standard. The market and the international community is already moving on this issue. Inaction at this point is likely to prove costly for California and detrimental to EV adoption and the growth of the broader market, while being out of sync with the State's longstanding leadership role in clean and advanced mobility.

VGI through the EVSE can harmonize the widely varying landscape of standardization and proprietary protocols at the EV level and accelerate the realization of VGI by not holding the accrual of benefits to EV drivers and the grid dependent on automaker-by-automaker progress on alternate telematics-based pathways. This methodology does not hamper the ability to make

progress via alternate pathways, and indeed may instead catalyze and accelerate progress at the EV level to further benefit EV drivers and the broader market.

Recommendations for Standards

For these reasons, Greenlots cannot support the key finding of the report, that “it is not advisable to require the investor-owned utilities to only use a single protocol, or specific combination of protocols, for their infrastructure investments at this time.” We believe that it is critical to align on a common set of protocols and standards to ensure interoperability. This should start with the core use cases and communication pathways within the original scope of this working group—those that directly affect the deployment of EV charging infrastructure that will be placed in service with ratepayer dollars. Development of infrastructure silos within each IOU territory will significantly limit the value of VGI and this must be avoided.

Therefore, this should start with standardized upstream communication interfaces from EVSE to Network Operators, Utility Systems and other applicable market participants as a critical first step in enabling an interoperable ecosystem for VGI. We support Siemens’ alternate proposal with respect to smart charging as an appropriate framework for accomplishing this. Indeed, the Open Charge Point Protocol (OCPP) and OpenADR are already promising and widely adopted protocols for communication between EVSE and other entities. IOU EVSE programs in the state have already made significant progress in coalescing around these protocols. OCPP 2.0 will also support communication to the EV via ISO 15118, an existing international standard that is also the most widely-adopted standard by electric vehicle manufacturers.

Together, these standards create a complete VGI communication pathway between the EV and upstream parties via the EVSE with the most widely-adopted protocols to date. As Siemens notes, their alternate proposal also does not preclude other standards, such as IEEE 2030.5, to be chosen by the IOUs should this landscape change dramatically. Moreover, these steps in no way hamper or affect developments among alternate EV-centric VGI pathways.

Recommendations for Hardware Performance Requirements

Greenlots supports several of the hardware performance requirements proposed in the draft report. Specifically, we support the networking standards (IEEE 802.11n or IEEE 802.3) in addition to the inclusion of HomePlug Green PHY PLC. The former are non-controversial, industry-accepted network communication standards and the latter is understood to be a needed physical hardware layer to facilitate communication and advanced functionality between EVs and EVSE, whether that be VGI, “plug and charge” or other use cases.

We recognize that HomePlug Green PHY has had limited use or adoption by EVSE manufacturers to date (outside of DC fast charging which requires EV-EVSE communication), and that it will add some cost to EVSE deployed. However, given the very limited scope of the hardware requirements as defined in the draft report, which would include no IOU proposals currently before the Commission, we feel its inclusion is appropriate given the use cases it unlocks and the advanced functionality it is necessary to facilitate. The fact that a good number of automakers have already committed to including support for the technology in millions of EVs over the next few years further speaks to its future-proofing value.

Outside of these specific hardware requirements however, we echo the concerns voiced by Siemens, as the remaining “minimum hardware functionality requirements” as specified in

Table 4 on page 32-33 are vague and imprecisely defined. We'd recommend that these requirements either be removed or if possible, specified in a more definitive, substantive manner.

Recommendations Regarding the Scope of the Report

We see merit in the sentiments expressed by several commenters—ORA and the Joint OEMs in particular—regarding the limited, narrow scope of the draft report's recommendations. In particular, excluding single-user residential and private workplace Level 2 charging should give significant pause considering the potential value of VGI functionality possible in those contexts. While we recognize that there are cost considerations to take into account, there are also costs and risks associated with not including these important segments of the market. For these reasons, we agree with ChargePoint's sentiments regarding the very high potential for VGI use cases in the residential context in particular, and see merit in ORA's suggestions that the requirements be applied to other EVSE types to the extent they can be achieved cost-effectively.

Conclusion

As discussed in our opening comments, the adoption of open protocols and standards is essential to support transportation electrification, grow the market for EVs, enhance the driver/customer experience, integrate with the electricity system, and lower the cost of ownership of both EVs and EV charging infrastructure. The proliferation of open protocols and standards provides a platform and ecosystem for innovation and customer choice that is critical in guarding against stranded assets and protecting the prudence of ratepayer investments.

This working group process and report must not lose sight of these realities and punt on the issues that it was originally formed and tasked to address. The working group's broadened

view unfortunately has pointed the draft report down a path of attempting to maximize flexibility and a level of analysis paralysis that runs counter to its original goals and could very well set back the progress of the industry.

These sentiments are reflected in the opening comments of many other stakeholders, including ChargePoint, Siemens, the Joint OEMs, and Oxygen Initiative, that similarly point to the unintended pitfalls in the path forward described in the draft report. Avoiding this outcome is critical, and we similarly suggest that this be done through a narrower focus that is more in line with the original expectation that VGI functionality of EVSE and the prudence of the ratepayer investments in this infrastructure that will be made one way or the other.

As many other commenters suggested, Greenlots would support continuing the working group process to continue to make progress on these issues. Greenlots appreciates Staff and stakeholders' time and effort invested into this process, and we look forward to continued engagement with the Commission, agencies, and stakeholders on this critical topic.

Respectfully submitted,

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Dated: April 4, 2018