**Vehicle-Grid Integration Communications Protocol Working Group**

**CPUC and CEC Staff Straw Proposal 3/9/17**

**Objective**: The California Public Utilities Commission, California Energy Commission, and other State agencies will assess how and whether the adoption of a communications protocol is necessary to enable Plug-In Electric Vehicle-Grid Integration (VGI) resources to more economically participate in electricity markets at scale.

**Strategy**: Form a working group to identify and assess opportunities in which VGI can create value from multiple market participants’ perspectives, communication protocols needed to deliver that value, and concepts for how utilities, automakers, electric vehicle service providers, aggregators, and others can develop pathways to market for a VGI resource. The working group will allow participants to review, understand, and discuss the technical details of existing communication protocols. The recommendations of the working group will be considered and incorporated in CPUC’s Rulemaking 13-11-007 (and/or the SB 350 Transportation Electrification applications A.17-01-020, A.17-01-021 and A.17-01-022) and the Energy Commission’s Integrated Energy Policy Report (IEPR) proceeding for future policy decisions.

**Questions for Working Group to consider:**

*Review of current landscape and problem*

1. Review research that has been conducted in California and globally by utilities, automakers, charging companies, and others related to VGI. What lessons learned from the research are relevant to working group activities?
2. Review existing and identify any additional potential VGI use cases.[[1]](#footnote-1) How can customers, third parties, and utilities extract value from these use cases?
3. Review the current technical and economic barriers to implementing VGI use cases. Identify any market barriers that may be addressed by state action.
4. What frameworks, outcomes, or criteria have prior studies employed to analyze the functionalities, costs, efficiency, interoperability, (or other factors) of VGI communications protocols?

*Identification and discussion of communications protocols*

1. Review the existing applicable communication protocols.
   1. For a VGI resource regulated at the EVSE, how can different communication protocols enable a pathway to utility markets for the VGI product?
   2. For a VGI resource regulated at the EV, how can different communication protocols enable a pathway to utility markets for the VGI product?
   3. What are the pros and cons of each communication protocol?
2. What are the existing or proposed network architectures for VGI? How are existing network architectures designed to host communication protocols in the devices needed for VGI? What are the pros/cons of each architecture? Can these architectures support multiple communication protocols?
3. Can selecting an open-source network architecture enable the market to test, implement, and continually improve multiple protocols while maintaining simplicity for drivers? What are the implications of architecture design for market participants manufacturing devices?
4. How do proposed protocols fit within the larger context of communications between vehicles, EVSE, the grid, utilities, automakers, EVSPs, and other distributed energy resources?

*Implementation & pathways to market*

1. How have IOUs tested whether proposed protocols/architectures are effective in facilitating VGI and what improvements should be made to enable scale? What contractual terms and conditions should utilities include in procurement or other programs to ensure EVs can provide grid value?
2. What technology, hardware, and/or software is currently available to test the proposed protocols? Where are technology gaps?
3. How do automakers, charging providers, and IOUs measure the value of the proposed protocols and whether implementation will be cost-effective? How could market participants measure cost-effectiveness?

**Scope:**

* Focuses primarily on light duty vehicles, but seeks synergies with the medium duty and heavy duty vehicles sector.
* Assesses existing protocols or standards as defined and/or anticipated today, does not attempt to develop a new protocol.
* Relates to CPUC/IOU or other state agency investments in transportation electrification. For example, if the CPUC adopts a protocol, it would mean that future IOU investments in transportation electrification must be compatible with that protocol. It would not preclude the use of additional protocols.

**Working Group Participants**:

* State Sponsors: Public Utilities Commission, Energy Commission, Air Resources Board, and Governor’s Office of Business and Economic Development.
* Facilitator: Independent technical expert (engineer) with experience in facilitation who is not a party to any CPUC proceedings, or existing recipient of State funding related to transportation electrification or alternative-fueled vehicles.
* Participants: Utilities, automakers, EV service providers, ratepayer advocates, nonprofits, participants in standards development, and other interested groups.

**Timing**:

* March 2017: establish working group.
* April-September 2017: facilitator holds bi-weekly conference calls.
* October 2017: facilitator will prepare and submit report of working group recommendations to the service list.
* November 2017: Parties may submit comments and reply comments on the report.

1. The California Vehicle-Grid Integration Roadmap (2014) identified “value of VGI” as one of three barriers and identified “refining use cases” as an action item. Roadmap is available at: <https://www.caiso.com/Documents/Vehicle-GridIntegrationRoadmap.pdf>. [↑](#footnote-ref-1)