

December 1, 2017 WEBEX MEETING NOTES

Summary

- Attendance: approximately 30 attendees via Webex
- Presentations and notes available online: <http://www.cpuc.ca.gov/vgi/>
- Stephanie Palmer, ARB
 - Stephanie provided an overview of the ARB, CPUC, CAISO, and GO-BIZ revised proposal for hardware functionality requirements for Level 2 EVSE
 - CEC staff noted that they do not currently support the proposal
- Stakeholder feedback
 - Stakeholders provided their feedback on the revised proposal, and also responded to the questions the state agencies posed in the meeting's agenda. These comments are detailed below.
- Stakeholders and state agencies suggested agenda items for the final working group meeting on December 18, 2017
 - Cybersecurity: J2931-7, NIST 7628, UL2900, etc.
 - Metering accuracy next steps
 - Definitions/Glossary
 - How recommendation applies generally to future IOU infrastructure proposals
 - Present draft outline of working group final report for stakeholder feedback
 - Discussion of state agencies' future plans on the VGI Roadmap and additional items for discussion during the Roadmap process
 - Need for additional research or deployment pilots
 - Value of use cases, and what data we need for this discussion
 - Ratepayer benefits
 - Driver experience

Action Items & Next Steps

- Facilitator Justin Regnier will schedule a call in December to discuss next steps on meter accuracy requirements.
- The final in person Working Group meeting is Monday, December 18 in San Francisco.
- State agencies will share the revised proposal and agenda in advance of this meeting.

Resources

- Email the state agencies (CPUC, CEC, ARB, CAISO, GO-Biz) with any questions or comments: vgiworkinggroup@cpuc.ca.gov
- Meeting materials available at: <http://www.cpuc.ca.gov/vgi/>

Detailed Comments

Understanding that hardware alone can't enable VGI, do the hardware requirements in the amended proposal support VGI software enabling multiple protocols?

- Participants generally thought that yes, the hardware approach would allow for the use of the necessary protocols.
- Dean Taylor
 - Will be using pulse with modulation in the near term, but eventually yes.
- Jeremy Whaling
 - Yes, but suggest an independent entity review or oversee cybersecurity recommendations, both now and during implementation.
 - Unsure of the specific cybersecurity requirements, may want an expert to review UL 2900
- Harry Haas
 - The proposal is generally correct if the hardware has sufficient capability (processing and memory)
 - It's difficult to provide much more specificity in the recommendation, so it will have to be somewhat general
 - Question regarding 15118 implementation atop HomePlug Green PHY (HPGP) processor
 - Gadi Lenz: There are already products and modules that do both (PLC + memory to implement 15118 and others simultaneously), e.g. STMicroelectronics ST2100 SoC
 - Justin: Are there products to encrypt, decrypt, and translate?
 - Gadi will send the group the reference to chipset.
- Rey Gonzalez
 - Is the question geared at whether specifying hardware will be able to support protocols at a later time? Flashing is one thing, but if the product has been validated and verified to support X protocols, this must be established. If we are going to procure a box that can be upgraded, it must support X.
 - Justin: what specifications of hardware will be able to achieve the functionality we require?
- Gadi Lenz
 - For cybersecurity assessments Sensa Security, a Korean IoT company may be able to provide the group some information
 - Hank McGlynn: SAE 2931-7 is about EV/EVSE cybersecurity and will be published in January

How can the hardware proposal be applied to the IOU proposals for light-duty charging infrastructure the CPUC is currently reviewing (PG&E's DC Fast Charge Infrastructure Proposal, SDG&E's Residential Charging Infrastructure Proposal)?

- Stakeholders suggested that the current hardware proposal should not apply to any of the pending SB 350 standard review projects of PG&E, SCE, or SDG&E.
- CPUC: Although this working group was intended to apply to the current IOU proposals the CPUC is considering, the analysis will still be valid in our assessment of future proposals, and the

CPUC wants to understand how the working group recommendations will be generally applicable to any IOU proposals.

- Dean Taylor
 - Shouldn't apply to current IOU proposals.
 - For PG&E's DCFC proposal, fast charging doesn't allow enough of an opportunity to do much V2G and the group hasn't discussed DC charging, or DC slow charging, in enough detail.
 - For SDG&E's residential proposal, the cost increase is a concern
- Abigail Tinker
 - Agree with Dean that this should not apply to PG&E's DC Fast charge Make Readies

Should all of the hardware requirements apply to both multi-use (public, workplace, and MUD common areas) and residential charging stations?

- Stakeholders generally suggested that the hardware requirements in the proposal should apply only to multi-use (public, publicly-accessible workplace, MUD) Level 2 AC charging.
- CPUC: in some settings, such as private residential, do stakeholders think that only a subset of the hardware requirements are needed? Or, none of the hardware requirements?
- Dean Taylor
 - Should not apply in a private residential setting due to increased costs of implementation, EVSE certification, others
 - Should give options for future proofing in residential setting. One option could be bridging and routing only.
- Harry Haas
 - Does not support routing and bridging as only solution.
 - Recommend EV/EVSE communication, which should include HPGP. Do not require residential HPGP.
 - Require EVSE/utility or aggregator communications.
- Jeremy Whaling
 - In contrast to publicly-accessible or multi-use workplace charging, private workplace charging should be treated like private residential charging. They generally have predictable loads. In both cases, don't want a costly recommendation for the private setting. Recommend against any requirements for these sectors.
 - Want to keep costs of EVSE low in these settings.
 - Don't think that requiring bridging and routing does much. Even with bridging and routing, the EVSE still need a network.
 - Additional features do have value and they may be needed later, not right away.
 - For public and MUD: EV to EVSE communications is critical because additional value from predictive patterns. In public there is sporadic use. Having communication in public add value.
 - Amy Mesrobian: Should HPGP be in private residences and workplaces?
 - The packets of data need to go *somewhere*, to a PFE for management.
 - HPGP doesn't get you to the power flow entity, so mandating HPGP would essentially mandate everything in the recommendation.

Should site hosts be allowed to utilize an external protocol converter to serve as the processor /memory for multiple EVSE?

- Stakeholders generally supported this idea.
- CPUC: Mike Bourton provided a PowerPoint presentation posted under the meeting materials for today that outlines this proposal. CPUC is interested in this proposal if it can reduce ratepayer costs, while still allowing the EVSE to enable the protocols we have identified in the proposal.
- Josh McDonald
 - Usually management is through a site controller and gateway
 - Done now with J 1772, haven't done it with higher level protocols yet
- Participants discussed whether an external protocol converter could be used with ISO 15118
 - Stephan Voit
 - Communication is an EV/EVSE through the HPGP chipset. No other entity can get into the communication. If a BMS gets information from someone northbound, the site can send an EVSE/EV communication.
 - Hank McGlynn
 - If the EVSEs don't speak BacNET (building control) it would need to convert for use in the EVSE. Don't want to design the EVSE.
 - Site controllers are dependent on the deployment and have nothing to do with the EVSE design
 - Harry Haas
 - Between grid and EV communications, there might be another device aside from the EVSE itself.
- Justin: The system must have at least one master with the ability to communicate.
- Tom Ashley
 - Next OCPP will package all of 15118 communications.
 - Justin: Should be incorporated if the standard will be finished within the life of the program
 - Gadi Lenz: Agree, cost is not as major as people think.

What kind of documentation should EVSE vendor/OEM provide to show compliance with hardware requirements?

- This topic area needs further discussion.
- CPUC: want one streamlined process or checklist that IOUs can use to clearly know whether EVSE meets the requirements. Do not want to review individual pieces of equipment, or create a new testing process. What documentation exists that EVSE providers can show as proof?
- Dean Taylor
 - CEC maintains a public (website) list
 - IOU or third party verification
 - Manufacturer self-certification with testing body
 - Josh McDonald: DMS weights & measures
- Hank McGlynn
 - Combine North and West communication.

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- Set up EVSE-to-X based on implementation of individual system.
- Need to show which standard that you're complying to.
 - UL safety standard, but not to the performance/compliance with functions.
 - UL 2574 has safety but not functional requirements.
- Harry Haas
 - FCC compliance for communications processors. Wi-Fi alliance compliance has no benefits
- Stephanie Palmer: How would we prove certification to over the air upgrade?
 - Gadi Lenz: OCPP messages would update. Just prove OTA via OCPP upgrade.
 - Harry Haas: Some code isn't touched because it is separated by processors, thus not all modules are upgraded.
- Jordan Smith
 - Establish open industry practices: ChargeReady has to certify to OpenADR via IOU or third party documentation subject to the utility has validation and verification.

Does Appendix A of the proposal accurately capture the use of the protocols? How can the working group's efforts to identify protocols be best documented, preserved, and built upon?

- CPUC, ARB, GO-BIZ, and CAISO updated the hardware proposal in response to specific stakeholder recommendations.
- Josh McDonald
 - Add OpenADR
 - Change SEP to IEEE 2030.5
 - Telematics uses 2030.5 or proprietary
- Harry Haas
 - Establish these requirements as minimums, and indicate that new versions of the standards may be available
- Hank McGlynn
 - Remove CHAdeMO because it is not AC.
 - Remove J1772 from the table and explain that it is a base level requirement
 - Need to include HLC.
 - Remove the SAE references that are redundant to SEP 2
- Abigail Tinker
 - Combine first two rows of tables
- Dean Taylor provided comments on documentation needed in the working group final report
 - Discuss the different actors and different steps
 - Need results from Deliverable 1.3 mapping exercise
 - Provide more justification of conclusions.
 - Be fair to business models
 - Cost-benefit analysis of use cases, including how to validate and determine the benefits of use cases
 - Explain the power flow entity
 - Validate customer experience and satisfaction
 - Explain why we didn't continue with deliverables 2 and 3 as initially envisioned

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- George Bellino
 - Be clear about the framework of the recommendation and what is included e.g. private workplace and residential not in scope

Were AC use cases found to have more potential value? If so, why?

- Overall, participants thought there were more VGI opportunities at AC charging stations, due to longer dwell times. The working group did not have as full of a discussion on DC use cases, and this could be considered in the future.
- Dean Taylor
 - Yes, because of long dwell times & opportunity charging with short dwell AC.
 - Haven't had enough time in working group to consider, should discuss in future.
- Stephan Voit
 - Fast charging limits grid integration capability.
- Tom Ashley
 - More opportunity in LT dwell scenarios.
 - The recommendation should apply to DC if for no other reason that DC will have more grid impact. Industry hasn't discussed how to manage DC needs among charging, but the need will increase.
- Peter Klauer
 - Given CAISO's minimum capacity requirement, DC could offer greater throughput to provide services.
- Lance
 - Customer's transportation needs and direction of power flow are important.
 - CHAdeMO EV to EVSE approach does not address DCVGI it requires additional information.
 - The working group was concerned with AC, while DC is already doing stuff with different concerns.
 - Fast charge vs Long dwell - don't lump issues together.
- Kelsey Johnson
 - There is value of DC, but it needs more detailed discussion, and the current proposal requirements shouldn't apply to DC.

Metering accuracy

- The issue of metering accuracy is a longer term issue. Participants agreed that we would not solve this issue during the conclusion of the working group, but that we would set up a call in December to discuss next steps.
- ANSI-C12, Section 20 refers to meter accuracy, but may be too stringent. Can use Handbook 44 requirements instead for the meter accuracy requirements
- Peter Klauer: CAISO DERP tariff defers to Local Regulatory Authority
- Ted Bohn: Meter accuracy pertains to the system output at the tip of connector, not the input. Per Handbook 44, commercial dispensing requires 1% accuracy for type evaluation.
- Harry Haas: 0.5% or 0.2% accuracy is greater than HB 44 requirements.
- Ted Bohn: Other aspects of HB 44 require fraud avoidance.

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- Josh McDonald: Public stations already require HB 44.
- Dean Taylor: Does accuracy apply if charging electricity is free?

Participants

- Facilitator: Justin Regnier
- CA Agencies: Carrie Sisto, Amy Mesrobian, Stephanie Palmer, Elise Keddie, Tyson Eckerle, Peter Klauer, Noel Crisostomo, Rey Gonzalez, Sam Lerman, Kiel Pratt, Matt Fung
- Jamie Hall, Ted Bohn, Josh McDonald, Lisa McGee, Stephan Voit, Alec Brooks, David Goldgraben, Tom Ashley, Gadi Lenz, Dean Taylor, Elpiniki Apostolaki Iosifidou, Harry Hass, Kelsey Johnson, George Bellino, Abigail Tinker, Erin Bach, George Bellino, Hank McGlynn, Jordan Smith, Lance Atkins, Liam Weaver, Mike Ferry, Quang Pham