

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA

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

Rulemaking 13-11-007

**COMMENTS OF THE OFFICE OF RATEPAYER ADVOCATES  
ON THE ASSIGNED COMMISSIONER'S RULING SEEKING COMMENT  
ON VEHICLE-GRID INTEGRATION COMMUNICATION PROTOCOL  
WORKING GROUP ENERGY DIVISION STAFF REPORT**

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**I. BACKGROUND**

On February 23, 2018, Assigned Commissioner Peterman issued an “Assigned Commissioner’s Ruling Seeking Comment on Vehicle-Grid Integration Communication Protocol Working Group Energy Division Staff Report” (Ruling) in Rulemaking (R.)13-11-007. The Energy Division’s Staff Report (Staff Report) summarizes the recommendations of the Vehicle-Grid Integration Communications Protocol Working Group (Working Group), consisting of the Energy Division, the California Energy Commission, the California Air Resources Board, the California Independent System Operator, GO-Biz, and over 130 stakeholders. The Working Group discussed transportation electrification (TE) infrastructure communication protocols to enable Vehicle-Grid Integration (VGI) economically and at scale. The Working Group recommended no specific suite of protocols for TE infrastructure be mandated. Instead, the Working Group recommended that hardware requirements for Level 2 multi-user electric vehicle service equipment (EVSE) be proscribed for future investor-owned utility (IOU) applications.<sup>1</sup>

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<sup>1</sup> Vehicle-Grid Integration Communications Protocol Working Group, *Energy Division Staff Report*, p.1-2 (hereinafter “Staff Report”).

The Ruling invited parties and stakeholders to submit comments on any aspect of the Staff Report and specifically requested comments on the following questions:<sup>2</sup>

1. Overall feedback on Staff Report
  - a. Does the Staff Report accurately reflect Working Group discussions?
  - b. Are there any key stakeholder comments that are missing from or misrepresented in the Staff Report?
  - c. Are all of the Deliverables referenced in the Staff Report, such as the Vehicle-Grid Integration (VGI) Glossary, complete and accurate based on Working Group discussions and findings?
2. Scope of electric vehicle service equipment (EVSE) hardware performance requirements
  - a. Is it appropriate, as described in the Staff Report, to exclude single-user EVSE in privately-accessible locations (e.g., home charging) from the EVSE hardware requirements for utilities?
  - b. Is it appropriate, as described in the Staff Report, to exclude workplaces or fleets that only use their EVSE for business vehicles from the EVSE hardware requirements for utilities?
  - c. If a third party, such as an aggregator, plans to aggregate residential or private workplace charging loads to provide grid benefits, would the recommended hardware requirements be appropriate to apply to these use cases?
    - i. If so, should the scope of the hardware requirements be extended to single-user residential or private workplace EVSE?
    - ii. If not, what EVSE hardware is necessary to enable an aggregator to provide VGI services (e.g. demand response) to residential and private workplaces in addition to any utility program offerings?
3. Identifying future VGI work
  - a. Are there specific research or technology pilots underway that could aid in identifying the value of use cases and/or the business case(s) for implementing VGI?

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<sup>2</sup> *Staff Report*, p. 5.

- b. Are there ideas for new research, development, or deployment pilots that would help utilities, electric vehicle service providers, and/or automobile manufacturers to identify the value of use cases and/or the business case(s) for VGI?
- c. Are there any policy proceedings not identified in the Staff Report that should be included in the VGI discussion going forward?

Pursuant to the Ruling, ORA submits these comments in response to the Staff Report to Carrie Sisto at [cs8@cpuc.ca.gov](mailto:cs8@cpuc.ca.gov), the service list in R.13-11-007 and the VGI Communication Protocol Working Group (available at <http://www.cpuc.ca.gov/vgi/>).

## **II. OVERALL FEEDBACK ON STAFF REPORT**

In general, ORA supports the work of the Working Group and agrees that the Staff Report reflects the work done by the Working Group. The Working Group produced valuable information, particularly in mapping use cases, developing consistent VGI terms, and identifying functionalities. ORA finds that the hardware proposal is well-designed to minimize stranded assets and support an open market for multiple communications protocols. ORA provides specific comments on the following topics: 1) quantifying the value of VGI communications protocols to ratepayers; 2) enabling VGI for all EVSE market sectors; 3) applying potential pilot objectives to current or anticipated Plug-In Electric Vehicle (PEV) or Transportation Electrification (TE) programs; and 4) continuing the work of the Working Group.

An important topic that was not resolved by the Working Group is quantifying the value of VGI to various stakeholder groups, including ratepayers. ORA agrees with the Staff Report's assertion that managed charging will become increasingly important to align electric vehicle (EV) charging with clean energy generation, achieving emissions benefits, and maintaining the safety and reliability of the grid.<sup>3</sup> If the value of these benefits were distinctly defined it would help to enable prioritization of technologies and protocols.

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<sup>3</sup> *Staff Report*, p. 13-14.

The Staff Report indicates that the Working Group did not have enough time or information to evaluate costs and benefits of specific communications protocols, suggesting ‘large-scale pilots’ would provide sufficient information.<sup>4</sup> ORA recommends exploring the value of VGI in current or anticipated EV programs rather than authorizing additional ratepayer funding for new projects (discussed further in Section IV: Identifying Future VGI Work). Additionally, a better understanding of the aggregate value of VGI, irrespective of which communications protocol is used, would be beneficial since the Working Group was unable to delineate and evaluate the value of specific communication protocols. As the Working Group advises: “Some automakers and service providers identified certain [VGI communication] protocols that will be deployed regardless of the outcome of the Working Group.”<sup>5</sup> Thus, a focus on the overall value of VGI could benefit all stakeholders.

### **III. SCOPE OF EVSE HARDWARE PERFORMANCE REQUIREMENTS**

The scope of the requirements recommended by the Working Group was limited to Level 2 (L2), alternating current (AC), conductive, multi-user EVSEs.<sup>6</sup> ORA recommends that any implemented VGI requirements, only to the extent they can be achieved cost-effectively, should apply to all EVSE types, not just public L2 AC EVSEs. While ORA acknowledges the justification proffered by the Working Group for limiting VGI requirements to L2 AC EVSEs at this time, excluding certain EVSE market sectors raises concerns in the long-term because the primary locations that EV charging will occur in the future remain uncertain. For instance, 85% of current light duty EV owners report that they charge at home, but there are statewide efforts to shift charging away from evening sessions at home to align with the midday solar generation peaks.<sup>7</sup>

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<sup>4</sup> *Staff Report*, p. 29.

<sup>5</sup> *Staff Report*, p. 29.

<sup>6</sup> *Staff Report*, p. 29.

<sup>7</sup> Idaho National Laboratory, Charging Behavior Revealed, <https://www.inl.gov/article/charging-behavior-revealed-large-national-studies-analyze-ev-infrastructure-needs/>.

Broadening the application of VGI communications protocols is also important, because of the array of the IOUs' current PEV and current and proposed TE programs. The Staff Report specifies that the objective of the Working Group was to “develop a recommendation on whether the CPUC should require a communication protocol or protocols for the EVSE and associated infrastructure the IOUs support with ratepayer funding.”<sup>8</sup> However, the IOUs' proposed TE programs consist primarily of medium duty/heavy duty and residential charging infrastructure,<sup>9</sup> and the current ongoing Plug-in Electric Vehicle (PEV) programs have significant workplace and multi-unit dwellings components.<sup>10</sup> The scope of these workplace, fleet, and privately-accessible EVSE programs provide considerable opportunity for VGI protocol implementation. While ORA maintains that it is appropriate for the conclusion of the Working Group to reflect the use case considered, other EVSE segments may be well-suited for VGI communications in the near future.

#### **IV. IDENTIFYING FUTURE VGI WORK**

The Staff Report highlights that many Working Group members recommended “Deploying large-scale pilots to test implementation of various communication protocols and identifying required funding” and “Assessing the value, including costs and benefits, of different use cases in providing VGI services to different markets and at various charging locations.”<sup>11</sup> ORA recommends that instead of funding new large-scale pilots, state agencies should first consider addressing the VGI communication protocol objectives identified in the Staff Report in current, pending, or anticipated TE programs to obviate the need for duplicative efforts and duplicative ratepayer funding. There are a several IOU and state PEV and TE programs through which VGI communication protocols can be directly or indirectly tested and data gathered from these programs. For

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<sup>8</sup> *Staff Report*, p. 11.

<sup>9</sup> Application (A.)17-01-020; A.17-01-021; A.17-01-022.

<sup>10</sup> Decision (D.)16-01-023, D.16-01-045, D.16-12-065.

<sup>11</sup> *Staff Report*, p. 37.

example, there is the Pacific Gas and Electric Company and BMW ChargeForward program,<sup>12</sup> the California Energy Commission’s Electric Program Investment Charge (EPIC) projects,<sup>13</sup> and the IOUs’ PEV programs and recently approved Priority Review Projects (PRPs).<sup>14</sup> In addition, there are programs currently under CPUC review, including the IOUs’ Standard Review Project (SRP) TE proposals for medium duty/heavy duty and residential infrastructure.<sup>15</sup> It is also anticipated that the IOUs may file applications to enhance their proposed TE programs, which may provide an appropriate venue for piloting the VGI communication protocols, in addition to any potential Phase 2 applications for the IOUs’ PEV programs and applications the IOUs are permitted file pursuant to Assembly Bill (AB) 1082 and AB 1083.<sup>16</sup>

AB 1082 authorizes “an electrical corporation to file with the [C]PUC, by July 30, 2018, a pilot program proposal for the installation of vehicle charging stations at school facilities and other educational institutions, giving priority to school facilities and other educational institutions located in disadvantaged communities, as defined. The bill would require the PUC to review, modify if appropriate, and decide whether to approve a pilot program proposal filed by an electrical corporation by December 31, 2018.” Similarly, AB 1083 authorizes filing of a pilot program proposal of vehicle charging stations at “state parks and beaches within its service territory.” Any applications pursuant to these assembly bills could provide a unique opportunity for VGI piloting. Additionally, contingent upon the results of the data collected and the IOUs’ review of their Phase 1 PEV programs, the IOUs may file a Phase 2 application to seek a full-scale rollout of these pilots.<sup>17</sup> If applications are filed and approved, these programs provide

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<sup>12</sup> BMW i Charge Forward: PG&E’s Electric Vehicle Smart Charging Pilot, available at <http://www.pgecurrents.com/wp-content/uploads/2017/06/PGE-BMW-iChargeForward-Final-Report.pdf>.

<sup>13</sup> California Energy Commission: Electric Program Investment Charge Workshops, Notices, and Documents <http://www.energy.ca.gov/research/epic/documents/>.

<sup>14</sup> D.16-01-023, D.16-01-045, D.16-12-065, D.18-01-024.

<sup>15</sup> A.17-01-020; A.17-01-021; A.17-01-022.

<sup>16</sup> Assembly Bill No. 1082, Stats. 2017, Chapter 637; Assembly Bill No. 1083, Stats. 2017, Chapter 638.

<sup>17</sup> D.16-01-023; D.16-01-045; D.16-12-065.

another potential avenue to test VGI communication protocols. With the IOUs' requesting hundreds of millions of dollars pending Commission approval for their SRP TE programs, ORA cautions against proposing additional large-scale programs. Addressing VGI pilot objectives with the aforementioned programs would support Senate Bill 350's goals for TE programs to minimize overall costs and maximize overall benefits.<sup>18</sup>

Finally, ORA recommends that the work of the Working Group be built upon and continue into 2018. The Working Group and its members produced some extremely valuable technical information. The documents produced by the VGI Communications Protocol Working Group, such as the Use Case, Requirements, and Mapping Sub-Working Group files, should be used as a reference guide for other work going forward. ORA looks forward to its continued involvement in future VGI activities.

Respectfully submitted,

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<sup>18</sup> Cal. Pub. Util. Code §740.12(b).