

**Joint Parties: Reply Comments R.13-11-007**

**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  
(Filed February 23, 2018)

**APRIL 4, 2018 REPLY COMMENTS OF THE JOINT PARTIES ON ASSIGNED  
COMMISSIONER’S RULING SEEKING COMMENT ON VEHICLE-INTEGRATION  
COMMUNICATION PROTOCOL WORKING GROUP ENERGY DIVISION STAFF  
REPORT**

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In accordance with the February 23, 2018 Assigned Commissioner’s Ruling (“ACR”), Seeking Comment on Vehicle-Grid Integration (“VGI”) Communication Protocol Working Group, Energy Division Staff Report in the above-captioned proceeding, the Joint Parties<sup>1</sup> hereby submit this reply to other parties’ comments.

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<sup>1</sup> For purposes of this document, the Joint Parties includes representatives from AEYCH LLC, the California Electric Transportation Coalition, the Electric Power Research Institute, Fiat Chrysler Automobiles, Ford Motor Company, Kitu Systems, Inc., Nissan North America, Inc., Pacific Gas & Electric Company, Plug In America, San Diego Gas & Electric Company, Southern California Edison, Southern California Public Power Authority, and Toyota Motor North America.

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## **I. SUMMARY OF THE JOINT PARTIES' REPLY COMMENTS**

The Joint Parties appreciate the opportunity to participate in the Working Group, provide comments on the Draft Staff Report, and reiterate our support for the Working Group process. The Working Group process is an effective mechanism to assess VGI-enabling technologies, where all stakeholders are able to share lessons learned and engage experts on various VGI-related issues. Contrary to some comments,<sup>2</sup> we believe the Working Group process was successful, and believe it should continue as specified in our opening comments.

We agree with Tesla<sup>3</sup> and the conclusion in the Staff Report<sup>4</sup> that it is not currently an appropriate time to mandate a specific communications protocol for ratepayer-supported infrastructure. We strongly disagree with Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha that California must pick ISO/IEC 15118 as the only approved communications protocol.<sup>5</sup>

The Joint Parties agree with other parties that presently there is not enough data or economic analysis to justify mandating any type of communications protocol between the grid and the vehicle.<sup>6</sup> We agree with Tesla and the Office of Ratepayer Advocates that the primary objectives going forward should be to define what VGI services<sup>7</sup> and use cases are the most valued, and what business models will incentivize stakeholders and customers to engage the technologies necessary to provide these services.<sup>8</sup> VGI pilot and large-scale demonstrations will be appropriate to vet the standards, assess cost for implementation and deployment, and verify value to the grid,

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<sup>2</sup> Siemens Comments, p. 3.

<sup>3</sup> Tesla Comments, pp. 2-3; Hank McGlynn Comments, p. 1.

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

<sup>5</sup> Volkswagen, Audi, Porsche, Daimler (Mercedes-Benz), Lucid Motors, and IoTecha Comments, p. 4; see also ChargePoint Comments, pp. 2-3.

<sup>6</sup> See, e.g., Tesla Comments, pp. 3, 7-8; Hank McGlynn Comments, p. 4.

<sup>7</sup> For example, benefits can flow to the EV driver, to all utility customers in avoided costs to the grid or through generation of LCFS credits, to the CAISO, and others.

<sup>8</sup> Tesla Comments, pp. 2-3, 7-8; ORA Comments, p. 3.

EV driver and other stakeholders. We also note that automaker participation will be achieved through a definitive business case for a VGI market, rather than through selection of a protocol.<sup>2</sup>

Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha suggest that the Staff Report needs to include wireless and DC charging due to future expectations of widespread use.<sup>10</sup> We do not find this appropriate to include as a requirement since the Working Group did not discuss wireless charging, found DC fast charging applications inappropriate for VGI functions, and did not address the applications or technologies currently employed for DC slow charging and V2G functions. The Joint Parties also agree with Tesla that the Staff Report should clearly state that single-family homes (detached and attached), private workplaces, and fleets are excluded from the requirements specified in the Staff Report.<sup>11</sup> The Joint Parties restate that the Staff Report's recommended hardware requirements in Table 4 are a reasonable compromise for public-access, multi-user charging locations with the modifications recommended in our opening comments.<sup>12</sup> However, we agree generally with Siemens' concerns about the Table 4 recommendations,<sup>13</sup> as costs to add these features in any charging location are relatively unknown and could be quite high.

## **II. DISCUSSION**

### **A. Continuing the Working Group process is useful and beneficial, and the agencies proposed a reasonable compromise on EVSE hardware in public-access charging-market segments.**

The Joint Parties disagree with Siemens regarding the Working Group process; we disagree that the process was intended to (or should) involve formal consensus or a voting process.<sup>14</sup> CPUC staff developed the Working Group to evaluate the technical details of existing communication

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<sup>2</sup> Oxygen Initiative Comments, p. 4.

<sup>10</sup> Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha Comments, p. 3.

<sup>11</sup> Tesla Comments, pp. 5-6; see also Kitu Systems Comments, pp. 7-8.

<sup>12</sup> See Joint Parties Opening Comments, pp. 9-10, 12, 15, explaining the clarifications we seek to Table 4.

<sup>13</sup> Siemens Comments, pp. 3-5.

<sup>14</sup> Siemens Comments, p. 3.

protocols and assess which, if any, might be appropriate for the CPUC to require to be used in ratepayer-supported infrastructure. The Work Plan for the Working Group process was developed through collaboration of interested stakeholders. It was never intended that the process would involve any consensus or majority vote by stakeholders on any issues related to selecting any protocol(s) for VGI. The purpose was to provide a structural method for providing needed understanding of the technical characteristics and relevant implementation costs of each of the protocols to the represented California agencies; and provide a basis for consideration of how the protocols apply to the objective of protecting the investment in infrastructure. The conclusions and recommendations, as supported by the data and information from the stakeholders, were primarily determined by the Working Group Panel. ChargePoint understood this process as stated, “[i]t was understood by Working Group members that this process was not intended to produce unanimously supported conclusions, but rather to provide feedback and possible recommendations for the Commission’s consideration.”<sup>15</sup>

The Working Group met from April through December 2017. We believe the Working Group process was an appropriate mechanism to assess which, if any, VGI-enabling technologies should be required for ratepayer-supported infrastructure. During the nine months the Working Group convened, all stakeholders were able to share lessons learned and engage experts on various VGI-related issues. The informal nature of the VGI Working Group facilitated improved dialogue, breaking down of silos, and faster progress. Many distinguished technical experts actively participated in the Working Group.<sup>16</sup> The Energy Division Staff Report notes the topics where more technical expertise is needed (e.g. metering and cybersecurity).

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<sup>15</sup> ChargePoint Comments, p. 1.

<sup>16</sup> Including Mike Bourton, Kitu Systems, Inc.; Oleg Logvinov, IoTecha; Hank McGlynn, AEYCH LLC; Rich Scholer, Fiat Chrysler Automobiles; Josh McDonald, Southern California Edison; George Bellino, Electric Power Research Institute; Barry Sole, Porsche; Adam Langton, BMW; and many others.

The process must continue to determine how to get broad VGI performance and certainty while also allowing flexibility in engineering and market choice. We agree with Tesla<sup>17</sup> that continuing the Working Group process will allow for use cases to be prioritized and understand the rapidly-changing VGI and charging-station world. As apparent in the opening comments, there is broad consensus that we can build on the success of the last year<sup>18</sup> and refine the process and structure to be more coordinated and efficient.

The Joint Parties restate that the Staff Report’s recommended hardware requirements in Table 4 are a reasonable compromise for public-access, multi-user charging locations, with the modifications recommended in our opening comments.<sup>19</sup> However, we agree generally with Siemens’ concerns about the Table 4 recommendations,<sup>20</sup> as costs to add these features are relatively unknown and could be quite high. There are multiple costs that add up: both up-front purchase costs for the EVSE, as well as potential on-going network fees.

We would also like to clarify that the statement in our opening comments—that an EVSE that meets the requirements in Table 4 could become a stranded asset<sup>21</sup>—should have said that the Table 4 *capabilities* could become a stranded asset. These capabilities could go unused in any environment, including public multi-user, private home, fleet, and workplaces, if other end-to-end solutions become dominate in these markets.

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<sup>17</sup> Tesla Comments, p. 7-8.

<sup>18</sup> See, e.g., Tesla Comments, pp. 3, 7-8; ORA Comments, p. 4, 7.

<sup>19</sup> See Joint Parties Opening Comments, pp. 9-10, 12, 15, explaining the clarifications we seek to Table 4.

<sup>20</sup> Siemens Comments, pp. 3-5.

<sup>21</sup> Joint Parties’ Opening Comments, p. 23 (“If automakers become the aggregators and bypass the EVSE with telematics, then the EVSE that meets the requirements in Table 4 becomes a stranded asset.”)

**B. It is too early to mandate a communications protocol for IOU investments as further study of the costs and benefits of VGI-enabling options is needed.**

We agree with Tesla<sup>22</sup> and the conclusion in the Staff Report<sup>23</sup> that it is not an appropriate time to mandate a specific communications protocol for ratepayer-supported infrastructure. A lack of clearly-articulated value, and enabling market mechanisms, are the two most important barriers to broad, accelerated implementation of VGI, and not a lack of a mandated protocol between the EVSE and EV. A lack of understanding of the size of the different VGI net values (e.g., to the EV driver, to the grid, or to the California Independent System Operator) is another barrier. We also agree that a key theme, stakeholders have been and are grappling with, is how to get broad VGI performance and certainty while also allowing flexibility in engineering and market choice.<sup>24</sup> Mandating standards will likely decelerate the process of broad VGI implementation by extinguishing innovation, flexibility, and market choice.

**1. More data and analyses are needed to justify requiring any type of communications protocol between the grid and vehicle.**

The Joint Parties and other stakeholders agree that presently there is not enough data and economic analysis to justify mandating any type of communications protocol between the grid and the vehicle.<sup>25</sup> Tesla stated, "...it is critical to first identify the business case and further evaluate the costs and benefits before moving forward with VGI communications protocol(s)."<sup>26</sup> Kitu Systems stated that "[n]o economic analysis of the benefits of selecting a single protocol or conversely, of the effects of not making a determination at this time have been provided in the

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<sup>22</sup> Tesla Comments, pp. 2-3; Hank McGlynn Comments, p. 1.

<sup>23</sup> Staff Report, p. 29.

<sup>24</sup> See, e.g., Tesla Comments, pp. 3, 5-8; Greenlots Comments, pp. 2-3; Siemens Comments, p. 4.

<sup>25</sup> See, e.g., Tesla Comments, pp. 3, 7-8; Hank McGlynn Comments, p. 4.

<sup>26</sup> Tesla Comments, p. 8.

Working Group.”<sup>27</sup> Finally, the Office of Ratepayer Advocates stated, “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.”<sup>28</sup> As the Staff Report points out, and the Joint Parties agree, stakeholders “determined that the potential value of VGI use cases needs further analysis, and potentially additional, large-scale pilots that identify the business case for enabling VGI as a resource.”<sup>29</sup>

**2. The VGI Working Group’s remaining deliverables and process must continue to better understand the VGI requirements, use cases, and other important considerations.**

Mandating any standards or requirements is not appropriate at this phase of VGI development because we are in a very early phase of understanding and determining VGI requirements, which include regulatory, technical, and business requirements. The Working Group’s deliverable 1 results are only the first step toward understanding what is technically feasible and capable to meet an initial set of consolidated use-case requirements, and what the limitations are. The deliverable 2 process is necessary to determine the valued use cases and the prioritization of these use cases, which will affect the determination of the consequential business requirements and regulatory implications. The Working Group’s deliverable 3 on policy recommendations is necessary to determine the regulatory requirements regarding VGI implementation and procurement policies, including low-cost, non-technical policy solutions that

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<sup>27</sup> Kitu Comments, p. 6.

<sup>28</sup> ORA Comments, p. 4.

<sup>29</sup> Staff Report, p. 20.

deliver value to EV drivers, avoid unneeded costs to the grid, and provide benefits to non-utility stakeholders, including rates, education, charging rebate design, and generation of LCFS credits.

**3. Additional deliverables, such as large-scale VGI pilots and demonstrations are needed to accelerate VGI solutions and technologies.**

We agree with Tesla and the Office of Ratepayer Advocates<sup>30</sup> that the primary objective going forward should be to define what VGI services<sup>31</sup> and use cases are the most valued, and what business models will incentivize stakeholders and customers to engage the technologies necessary to provide these services. VGI pilot and large-scale demonstrations will be appropriate to vet the standards, assess cost for implementation and deployment, and verify value to the grid, EV drivers, and other stakeholders.

**4. California should not select ISO/IEC 15118 as the only approved communications protocol.**

We strongly disagree with Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha that California must pick ISO/IEC 15118 as the only approved communications protocol.<sup>32</sup> Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha do not agree with the Staff Report and recommend that the CPUC mandate ISO/IEC 15118 for ratepayer-supported infrastructure.<sup>33</sup> Cybersecurity shortcomings are the primary reason ISO/IEC 15118 is not an acceptable solution today. End-to-end cybersecurity<sup>34</sup> is and will be a critical differentiator among the various alternative mechanisms for data transport. And, cybersecurity issues have yet to be appropriately considered by experts in this area. ISO/IEC 15118 communicates between the EVSE

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<sup>30</sup> Tesla Comments, pp. 2-3, 7-8; ORA Comments, p. 3.

<sup>31</sup> For example, benefits can flow to the EV driver, to all utility customers in avoided costs to the grid or through generation of LCFS credits, to the CAISO, and others.

<sup>32</sup> Volkswagen, Audi, Porsche, Daimler (Mercedes-Benz), Lucid Motors, and IoTecha Comments, p. 4; see also ChargePoint Comments, pp. 2-3.

<sup>33</sup> *Ibid.*

<sup>34</sup> When discussing ‘end-to-end’, one ‘end’ is the utility or aggregator back office. The other ‘end’ is the EV.

and EV, and does not provide a secure end-to-end system (e.g., PFE to EV),<sup>35</sup> compatible with current utility cybersecurity standards. Future discussions and decisions about VGI must consider cybersecurity.

Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha state that “...we would like to see a clear recommendation in order to minimize interoperability issues and reduce overall costs.”<sup>36</sup> While the Joint Parties believe interoperability is absolutely critical because the IOU infrastructure deployments involve many vendors of PFEs, EVSEs, and EVs, we do not agree that mandating a multi-protocol solution minimizes interoperability issues or reduces costs. At the least complex, EVSEs from multiple vendors should be able to map the PFE protocol uniformly to the EV protocol supported by multiple automakers. This cannot be determined by each EVSE vendor or else there will be no interoperability. The implication is that there will need to be at least one mapping standard developed by a recognized Standards Development Organization (SDO), conformance tests, and a certification program. If there are two possible protocols between the PFE and EVSE, the industry would need a standard/certification for each mapping. This will take time and has cost implications. A single protocol between the PFE and EV does not have these same interoperability considerations and is a lower-cost option.

Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha claim that Table 2 shows ISO/IEC 15118 is the most common platform in the next 10 years of automaker plans.<sup>37</sup> The Joint Parties request that Table 2 be deleted from the final Staff Report because it was an informal poll of parties and may not represent the formal position of the parties listed in the table.

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<sup>35</sup> As shown in Figure 2, ISO/IEC 15118 must be combined with another communication protocol such as Open ADR 2.0 or OCPP to go from PFE to EVSE.

<sup>36</sup> Volkswagen, Audi, Porsche, Daimler (Mercedes-Benz), Lucid Motors, and IoTecha Comments, p. 3.

<sup>37</sup> *Id.* at p. 4.

Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha claim that ISO/IEC 15118 has been the direction of industry for the last 5 years, and not mandating its use will be a setback for the industry.<sup>38</sup> The Joint Parties point out that other communications-protocol efforts have been underway for that long or longer, such as the Department of Energy program, DE-EE0002720.<sup>39</sup> This included three types of Price programs, along with Demand Response Load Control (DLRC) that is identified in SAE J2847/1.<sup>40</sup> Without a clear analysis of what we want to accomplish with VGI and the pros and cons of different solutions, it is impossible to demonstrate which communications protocol, if any, should be required.

Oxygen Initiative also states that “EV’s [sic] and charging stations are outside the scope of Rule 21. Further, given the distributed energy resource (DER) model of ISO 15118, DER certification and dispatch are fully supported by the ISO 15118 protocol.”<sup>41</sup> While it is true that EVs are outside the scope of Rule 21, if and when vehicles are able to discharge onto the distribution grid, then they may be under the aegis of Rule 21. Besides managing charge and discharge settings and limits, Rule 21 requires support for the modification and scheduling of curves, ramp rates and fixed-power factor settings, among other functions. The use cases and requirements derived during the deliverable 1 work reflected this and confirmed that ISO 15118 could not support this additional functionality. Additionally, per Rule 21, the DER, its management system or aggregator, must support IEEE 2030.5.

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<sup>38</sup> *Ibid.*

<sup>39</sup> This project successfully demonstrated SEP2 Smart Charging with 24 RAM truck vehicles and 7 Utilities along with EPRI’s support from 2013 thru 2014. One of these RAM trucks, using the J2847/1 communications standard, was part of the Vehicle Grid Integration Project demonstration at SMUD in October 2014 showing end to end or PFE to EV Demand Response Load Control communications.

<sup>40</sup> See Society of Automakers (SAE) J2847 – J2836 – J2931 Series. SAE, with support from EPRI and the utilities, started in 2008 to begin the development of communications between the plug-in electric vehicle and the utility grid, covering every aspect of VGI for smart charging, V2G, PLC communications, etc.

<sup>41</sup> Oxygen Initiative Comments, pp. 3-4.

Oxygen Initiative states that supporting both protocols will add costs for EVSE providers and manufacturers.<sup>42</sup> This statement is incorrect. The Working Group recommendation is to enable the EVSE to support one of the protocols, not to require each EVSE to accommodate both protocols. However, to that end, IEEE 2030.5 only requires the PLC for bridging or pass-through of messages to the EV, whereas ISO/IEC 15118 requires implementation of additional security and coding to accommodate translation, encryption, and decryption of messages from the EVSE. It is feasible for a single EVSE to simultaneously support both protocols, although the Working Group's recommendation would not require this. The primary cost impact, aside from the initial standardization and certification work, will be non-recurring software engineering development.

**C. Neither a market signal nor a communications-protocol mandate is necessary to achieve automaker participation for VGI.**

**1. Determining the business case for VGI is most important.**

Oxygen Initiative expressed a concern that the Working Group recommendation for the EVSE to apply the HomePlug PLC functionality to support ISO/IEC 15118 and/or IEEE 2030.5 “fails to deliver the market signal to automakers needed for their product planning.”<sup>43</sup> Automaker participation will be achieved through a definitive business case for a VGI market, rather than through selection of a protocol. The Joint Parties agree with several automakers<sup>44</sup> and stakeholders<sup>45</sup> that we must determine a business case for VGI and a process for vetting the value and cost, including customer engagement/value, which requires pilot programs.

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<sup>42</sup> Oxygen Initiative Comments, p. 4.

<sup>43</sup> Oxygen Initiative Comments, p. 4.

<sup>44</sup> Including GM, BMW, Ford, Chrysler, Honda, Toyota, and Nissan, during the Working Group meetings.

<sup>45</sup> Tesla Comments, p. 8; ORA Comments, pp. 4-7; ChargePoint Comments, pp. 3-5.

**2. Mandating a communications protocol is not necessary to accelerate VGI technologies or reduce costs to drivers and the grid.**

The Joint Parties' opening comments recommend various actions to increase VGI implementation, reduce costs to EV drivers, and reduce costs to the grid.<sup>46</sup> These recommended actions are market signals of different types. As far as securing benefits from selling energy or ancillary services to the CAISO, the Joint Parties recommend accelerating efforts to understand the costs, benefits and risks of this market. Because the CAISO market is competitive, it is not clear that EVs can provide significant or long-term benefits in that market, and the value stream may be small compared to other types of VGI services.<sup>47</sup>

**3. Automaker participation can be accelerated.**

The Joint Parties agree with Greenlots and Chargepoint that the stakes are high.<sup>48</sup> Therefore, we must move forward appropriately and with sufficient resources, so that both the regulator and stakeholder community can go faster with VGI projects and automaker support. VGI solutions can continue to develop and be deployed, even in the utility programs, without the CPUC making a ruling on specific hardware or software communications protocols.

**4. “No-regrets” VGI solutions are best at this time because they do not favor one business model or end-to-end VGI communications pathway over another.**

In addition, the hardware proposal in Table 4 (as modified by the Joint Parties) does not limit any automaker or charging-station provider, as this proposal provides freedom of choice regarding a software communications protocol. The hardware proposal is a “no regrets” solution

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<sup>46</sup> Joint Parties Opening Comments, p. 22.

<sup>47</sup> For example, savings to EV drivers compared to gasoline, avoided costs to all utility ratepayers by avoiding unneeded distribution upgrades, and generating LCFS credits in some charging market segments.

<sup>48</sup> Greenlots Comments, pp. 3-4; ChargePoint Comments, p. 2.

that allows agencies and utilities to not favor one business model over another, or one end-to-end VGI-communications pathway over another.<sup>49</sup>

**D. Decisions on wireless and direct-current charging are appropriately postponed to a later phase of the agencies' efforts.**

Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha suggest that the Staff Report needs to include wireless and DC charging due to future expectations of widespread use.<sup>50</sup> We do not find this appropriate to include as a requirement because the Working Group did not discuss wireless charging, found DC fast charging applications inappropriate for VGI functions (given the customer's interest in speed), and did not address the applications or technologies currently employed for DC slow charging and V2G functions. In addition, wireless charging technology and communications are still not fully developed. For these reasons, it is not appropriate to include detailed discussions on these topics in the Staff Report and any decisions on these technologies should be postponed to a future phase of the agencies' activity.

**E. Excluding private homes, workplaces, and fleets from proposed hardware requirements in Table 4 is appropriate at this time.**

We agree with Tesla that the Staff Report should clearly state that single-family homes (detached and attached), private workplaces, and fleets are excluded from the proposed hardware requirements in Table 4,<sup>51</sup> rather than leaving this to interpretation of the terms such as "private," "public," or "multi-user." We agree with ORA that fleets, workplaces, and homes may be suited

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<sup>49</sup> See modified Figure 2, Joint Parties' Opening Comments, p.8. Automakers who opt to use telematics or IEEE 2030.5 to bypass or pass through the charging station have a very different business model than others who are relying on the charging station as a key information node. CARB's staff proposal for modifying the LCFS regulation similarly allows these different business models to coexist.

<sup>50</sup> Volkswagen, Audi, Porsche, Daimler, Lucid Motors, and IoTecha Comments, p. 3.

<sup>51</sup> Tesla Comments, pp. 5-6; see also Kitu Systems Comments, pp. 7-8.

for VGI communications in the future,<sup>52</sup> and that we can continue to consider these use cases in the Working Group and via pilot programs, but these private locations should not initially be required to comply with the proposed requirements in the Staff Report at this time due to cost concerns currently outweighing the additional benefits in private locations.<sup>53</sup> Networking and physical security add even more costs to charging locations with restricted access. While the additional costs were debated within the Working Group, there was not a definitive answer, and some estimates were substantial, especially for price-sensitive charging market segments like private workplaces, homes and fleets. Further, we agree with Siemens that cost is a concern and that the goal of standards is to lower the total cost of ownership.<sup>54</sup>

We also note that VGI solutions are being explored for home, workplace, and fleet charging markets. Nissan has a plan to address these markets with DC slow charge equipment and others have various plans to address VGI in these markets as well.<sup>55</sup> Low-cost and/or customized solutions for the home, fleet, and private-workplace charging segments should be explored first before any mandate that EVSE in these locations meet the requirements in Table 4, such as rates, demand-response programs, demand-charge experiments, use of the EV's dashboard to set favorable charging times, telematics solutions, and charging-level incentives. Continuing to provide freedom of choice for site-hosts in these locations will result in innovative solutions including new ways to avoid networking fees and reduce up-front costs of the EVSE. We included

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<sup>52</sup> ORA Comments, pp. 4-5

<sup>53</sup> Staff Report, p. 32.

<sup>54</sup> Siemens at 2. The goal of lowering the total cost of ownership should also apply to any EVSE hardware or VGI communication protocol requirements on the IOUs.

<sup>55</sup> For example, Fiat Chrysler has plans for both IEEE 2030.5 and telematics. Many automakers allow drivers to program the time their EVs charge in order to take advantage of low cost off-peak electricity rates.

many technological examples in our opening comments that are available today to save EV drivers money and avoid costs to the grid.<sup>56</sup>

In addition, unlike public charging, fleets, homes, and private workplaces may not need as much uniformity or interoperability. For example, consumers buy different types of televisions or cell phones that do not have compatible remote controls or chargers, but it may not be an issue in the home/private environment since they may desire a unique solution. And even for public charging, we need to identify the interoperability need, define consumer and grid value, and define technical performance to achieve that value. Reaching full interoperability will take time.

### **III. CONCLUSION**

The Joint Parties appreciate the opportunity to submit this reply to the opening stakeholder comments for the Draft Staff Report. For the foregoing reasons, the Joint Parties respectfully request the Commission adopt the Joint Parties' recommendations into its final Staff Report.

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<sup>56</sup> Joint Parties' Opening Comments, p. 22.

Date: April 4, 2018

Respectfully submitted,



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<sup>57</sup> Pursuant to Rule 1.8(d) of the Rules of Practice and Procedure of the California Public Utilities Commission, I certify that I am authorized to sign and tender this document on behalf of the parties listed in Appendix 1.

## APPENDIX 1

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