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Siemens Comments on EV Charging Infrastructure

Additional submitted attachment is included below.

VIA ELECTRONIC FILING

May 21, 2018

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 18-HYD-01
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket 18-HYD-01: Siemens Comments on Staff Workshop on Governor's Executive Order B-48-18

On May 14, 2018, the California Energy Commission (CEC) held a workshop on activities proposed for hydrogen refueling and electric vehicle charging infrastructure pursuant to Governor Brown's Executive Order B-48-18. The workshop facilitated rich discussions between industry stakeholders on the investments and activities needed to spur infrastructure development that will help California meet the Governor's target of five million Zero Emission Vehicles (ZEVs) by 2030.

Siemens, a global technology powerhouse, is committed to sustainability, including achieving zero net carbon emissions by 2030 – the first major industrial corporation to make such a commitment. Siemens strongly supports the state's target and offers its global expertise to achieve the same. Siemens's transport electrification portfolio encompasses *plug to grid*, ranging from EV charging hardware and software, grid integration to specific technologies for electric buses and freight transport.

Siemens offers the following comments on the proposed activities.

Summary
Siemens is overall supportive of the CEC's proposed activities related to electric vehicle (EV) charging infrastructure. Significant investments are needed to meet California's targets, especially since the state significantly lags most developed countries in the ratio of available public charging stations to EVs. In addition, 85% of potential EV buyers in a recent survey stated that insufficient availability of charging infrastructure is a major barrier to a purchase decision.[1]

The funding being provided via the Alternative and Renewable Fuel and Vehicle Technology Program can have a meaningful positive impact on addressing the current lack of infrastructure. However, to maximize the benefits of this funding, we respectfully urge the CEC to address five strategic issues: **1) program prioritization, 2) First Come, First Served vs. Competitive Awards, 3) smart charging, 4) open payment and technical standards and 5) Energy Star requirement.**

1. Program Prioritization

[1] - Altman, Vilandrie & Company.

The CEC has available $134.5 million for EV charging infrastructure. Ideally, there would be an overarching plan which dictates this expenditure and links it to achieving the state's 5 million ZEV goal. This would enable the most cost-effective application of the funding, as well as ensure that the funding would result in direct and deliberate steps toward fulfilling the state's 2030 target. The next best alternative to such a plan is to have a *prioritization scheme* designed to achieve a similar outcome.

The EV charging infrastructure funding can be prioritized in two ways. *First,* spending can be linked **to promoting adoption of EVs toward the 5 million goal**. Certain infrastructure investments will be more likely to promote overall EV adoption than others. Geographical location, type of charger (e.g. Level 2 or DC Fast Charger), and public access are all key factors. To the extent infrastructure investments reduce fears among potential EV buyers that charging infrastructure will be available, such spending will promote adoption. This includes the customer experience: simple and widely used payment standards for any publicly located chargers will increase the comfort in adopting this new technology.

To the extent promoting EV adoption is the highest priority, **infrastructure for light duty vehicles is more important than for medium and heavy duty (MD/HD).** The reason is that MD/HD vehicles are operated by businesses that are driven by the economics – and those economics are overwhelmingly dependent on paying for the vehicles themselves. Buyers of LD vehicles are driven in part by economics but also in large part by psychological factors.[2] Therefore, the psychological benefit of having more charging infrastructure available will have, in comparison to promoting MD/HD adoption, a significantly larger effect.

Second, spending can be linked **to reducing GHG and other air emissions.** Investments leading to greater emission reductions per dollar spent should be prioritized over other spending. This calculation involves the per vehicle emissions for the vehicle type (LD/MD/HD), the effect of charger availability on increasing adoption of electric vehicles, and the utilization of the charging infrastructure funded by the CEC.

These factors should be balanced in prioritizing the spending.

2. First Come, First Served vs. Competitive Awards

In light of the concerns raised in the above topic regarding prioritization, Siemens believes that competitive awards are a better way of achieving the state's goals than are "first come, first served" programs. In the latter case, awardees are self-selected and receive awards based on barely meeting the minimum criteria for the awards. *In fact, there is no benefit for the awardee in doing anything more than the bare minimum.* With competitive awards, the awardees are, by definition, selected as the best among the applicant pool. Accordingly, the projects chosen in competitive solicitations will, almost by definition, better achieve the state's goals and drive taxpayer benefits via cost efficiencies.

3. Smart Charging

Siemens strongly urges the CEC to limit any funding for electric vehicle supply equipment (EVSE) to smart chargers. Smart chargers include bi-directional communications capability, as

[2] - Fanchao Liao, et al., *Consumer Preferences for Electric Vehicles: A Literature Review,* Transport Reviews, Vol. 37, No. 3, pp 252-275, 2017.

well as a sub-meter to record charging consumption and, thus, give EV owners the ability to understand and manage their charging (as well as aggregators or utilities the ability to send pricing signals). Smart chargers are essentially grid assets. Through dynamic pricing, smart chargers both reduce peak demand on the grid and enable EV owners to take advantage of lower off-peak rates (thus lowering fueling costs). Smart charging also enables demand response, providing financial benefits to EV drivers participating in the program and benefits to all ratepayers through reduced grid loading and flexibility sold back into the wholesale market.

Siemens respectfully urges the CEC to avoid funding any chargers that are not smart and, thus, not capable of delivering those benefits to EV owners and California ratepayers/taxpayers.

4. Open Technical and Payment Standards

Siemens respectfully urges the CEC to fund EV charging equipment for LD vehicles only if such charging equipment meets open payment and technical standards:

- For both Level 2 and DC Fast Charging, EVSE should utilize common and open communication protocols, and, as applicable for the specific charging domain, ensure interoperability between solution providers to eliminate any redundancies and reduce the risk of stranded assets that could plague long-term investments in *proprietary technologies.* Siemens suggests that **the CEC can require that chargers meet open standards but without specifying the specific standards**. The CEC can and should suggest that OCPPv1.6 and OpenADR 2.0 be identified as "promising standards that applicants should consider in submitting grant applications."

- The CEC should enforce SB 454, which requires all charging stations at public locations meet payment standards that allow for at least two options for payment – including credit cards – without additional membership or subscription requirements. Payment should be as simple and open as it is to use a gas station today. This translates to the equipping of all EVSE at public locations – where fees are charged – with credit card readers. The California Air Resources Board is developing the final implementation regulations for SB 454. In the meantime, the CEC should enforce SB 454 in any grants awarded under the current program.

5. Energy Star Requirement

Siemens urges the CEC to delay by one year the implementation of the Energy Star requirement for Level 2 chargers. We understand that Energy Star certification is being considered as a requirement for any CEC grant funds. Siemens understands the value of such certification. However, for two reasons, we respectfully urge the requirement be delayed by a year. *First*, we are aware of only one provider with such certification, meaning the CEC would essentially be **granting a monopoly** to that provider for Level 2 chargers funded in the program. *Second*, it takes close to a year for a non-certified provider to make and implement product changes, plus go through the testing and certification process. A delay in one year for this requirement would resolve these issues. As an alternative, the CEC could grant awards on the basis of a vendor commitment that Energy Star certification would be obtained prior to Level 2 charger deployment. This could be guaranteed contractually.

Siemens appreciates the opportunity to comment.

Chris King
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Siemens Digital Grid