

DOCKETED

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Siemens Comments in Favor of Smart EV Charging

Additional submitted attachment is included below.



January 24, 2020

California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Comments on Scope of the 2020 Load Management Rulemaking

Siemens appreciates the opportunity to file these comments regarding the 2020 Load Management Rulemaking. In this proceeding, we respectfully urge the Commission to consider a requirement¹ that all Level 2² EV chargers installed at homes, multi-family dwellings, businesses, and other locations – especially long-dwell sites – be “smart chargers.” “Smart” is defined as having the capabilities to measure consumption and to communicate (usually via Wi-Fi, sometimes cellular).

Background

Siemens is the first corporation of its size to commit to being net-zero carbon by 2030, anticipating a full transition to clean transportation. We are motivated by the goal of driving socio-economic benefits that stem from reducing GHG emissions and adoption of clean energy. Siemens generates over \$2 billion in in-state sales, employing over 4,000. With the intent of generating business efficiencies for our customers at workplaces, transit, government, utilities, fleet and other segments, Siemens manufactures/assembles its EV chargers and EVSE electrical components on both coasts of the U.S., including in California Siemens’ Plug to Grid™ eMobility product portfolio encompasses hardware, software and services that are currently deployed in 35 countries globally – our solutions are geared to maximize the abilities of EVs to act as Distributed Energy Resources, as well as to enable the effective harnessing of renewable sources.

EV Economic Benefits

EVs can deliver enormous economic benefits to the state – in addition to their environmental benefits. These economic benefits exceed \$22,000 per EV over its lifetime, of which nearly half

¹ - California would not be first. Under the Automated and Electric Vehicles Act of 2018, the UK Government has decided that virtually all Level 2 and DC Fast chargers must be smart. See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/817107/electric-vehicle-smart-charging.pdf

² - DC Fast Chargers are almost always have communications and metering capability already.

directly benefits the electricity system and ratepayers.³ However, to ensure these benefits flow to Californians, they must not be offset by large investments in grid reinforcement to handle the additional load imposed by EV chargers. Therefore, charging must be managed in a way that does not significantly increase peak loads on the bulk power system or the distribution network.

Smart Chargers

Smart – or “managed” – electric vehicle charging refers to managing refueling to lower electricity costs while minimizing grid impacts. Reducing fuel costs includes both increasing charging during off-peak times and reducing charging during peak hours. These strategies reduce energy costs and, where applicable, demand charges. Added savings result from using smart charging to leverage EVs as grid assets, as Distributed Energy Resources (DERs). The attached one-page Executive Brief provides additional detail.

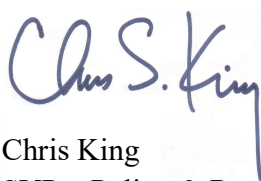
Cost-Benefit

Smart chargers cost more than chargers without communications and metering capability. The size of the differential is largely a result of the low volumes of smart chargers sold today. If all Level 2 chargers were smart, we believe the differential would be small – and the benefits very large. Details should be explored in this proceeding.

Conclusion

For the reasons given above, Siemens urges the Commission to consider a requirement that all Level 2 chargers in California be smart.

Siemens appreciates the opportunity to comment.



Chris King
SVP – Policy & Regulatory Affairs
eMobility

³ See C. King, *The untold story of the economic benefits of electric vehicles*, December 2019, available at <https://news.usa.siemens.biz/blog/untold-story-economic-benefits-electric-vehicles>

Executive Brief: Smart Charging for Electric Vehicles

Why smart charging?

The most important factor in EV adoption is lowering the Total Cost of Ownership, in both economic and consumer convenience terms.

Smart – or “managed” – electric vehicle charging refers to managing refueling to lower electricity costs while minimizing grid impacts. Reducing fuel costs includes both *increasing* charging during off-peak times and *reducing* charging during peak hours. These strategies reduce energy costs and, where applicable, demand charges. Added savings result from using smart charging to leverage EVs as grid assets, as Distributed Energy Resources (DERs).

Smart charging also includes the concept of optimizing the use of on-site resources such as solar power and battery storage. In depots, charging management must span multiple units.

Smart Charging Strategies

One smart charging strategy is “V1G”. This means managing charging so it normally happens off peak, entailing both the overall system peak as well as the local distribution peak. V1G is also turning off chargers for demand response events that typically occur 50 to 100 hours per year when the system or local grid experience especially high peak loads. For the wholesale power system, V1G can lower both capacity and energy costs. For the local grid, V1G can reduce or avoid the need for reinforcement to support EV charging loads.

Another approach is V2G, using the EV’s battery to send power back onto the grid for demand response or to provide ancillary services to the wholesale market.

To make V1G and V2G work, we need the right financial incentives and, equally important, smart charging technology. Time-of-use rates are a good start with day-ahead hourly prices even better.

What Makes a Charger Smart?

Smart chargers are defined by two key features that empower EVs to be DERs. First, they are networked. They can receive price signals and control commands, as well as send consumption data back to consumers. EV owners can program their chargers to turn on only when prices are low or to turn off when demand response events are called. To ensure customer choice, prevent vendor lock-in, and reduce stranded assets the communications interface must be standardized and interoperable.

Second, they have sub-meters built in. Sub-meters provide the data needed by drivers to understand their fueling costs, because the EV load is measured separately from the home or building. Sub-meters can also enable EV-only rates when the sub-meter is billing-accurate. This is being done by some utilities, where the sub-metering is combined with time-varying prices.

To capture the savings, smart chargers can interconnect with various entities. They can connect to utilities for billing and grid planning, EVSPs for charging management, utilities and aggregators for DR programs, customers for viewing data and controlling their own chargers, and, in the case of V2G, to EVs themselves.