

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA**

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

R-13-11-007
(Filed November 14, 2013)

**ADDITIONAL COMMENTS OF THE VOTE SOLAR INITIATIVE IN
RESPONSE TO ORDER INSTITUTING RULEMAKING**

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I. INTRODUCTION

On February 5, 2014, the California Public Utility Commission (Commission) issued a ruling setting a Prehearing Conference (PHC) for February 26, 2014 to address matters related to the Rulemaking to Consider Alternative-Fueled Vehicle Programs, Tariffs, and Policies, R.13-11-007 (Rulemaking). In the ruling, Administrative Law Judge Irene K. Moosen also offered an opportunity to provide further comments on previously published materials and invited responses to three specific questions. The deadline for submitting the requested comments as established in the ruling is February 19, 2014. The Vote Solar Initiative (Vote Solar) respectfully submits these timely comments in response to the ruling and addresses the Commission's specific questions below.

II. COMMENTS

Vote Solar participated in the Energy Division workshop on December 4, 2013 and provided Opening Comments on the Rulemaking on December 13, 2013. Having already provided comments on the Energy Division's Vehicle-Grid Integration whitepaper (Staff Whitepaper) and the proposals and views expressed at the workshop, the focus of these comments will be on the questions posed by February 5, 2014 ruling.

Question 1. What programmatic changes can be made to support Vehicle-Grid Integration (VGI) as a resource within existing or proposed state energy programs and policies, such as demand response, resource adequacy requirements, energy storage, interconnection, and net energy metering?

Response: As identified in the Staff Whitepaper, Electric Vehicles (EV) and Plug-In Hybrid Electric Vehicles (PHEV) have the potential to eliminate or mitigate challenges related to future reliance on very high levels of solar generation in California. If properly incented to do so, EV/PHEV owners can charge during daytime periods of solar “over-generation” as well as help manage the later afternoon/ evening ramp and provide ancillary services such as voltage support and frequency regulation throughout the day. However, in several Commission proceedings and/or California Independent System Operator (CAISO) planning efforts and programs, this value is being ignored, potentially leading to unnecessary measures being put into place that would discourage the deployment of distributed photovoltaic solar (PV) systems. Better coordination is needed to ensure that other proceedings do not constrain the options available in this Rulemaking.

A. Resource Adequacy Requirements

For example, in Phase III of the 2011 Resource Adequacy (RA) proceeding, Docket No. 11-10-023, the Commission is considering changes in the way it values the capacity contribution of solar resources. As directed by the California legislature, the Commission is adopting an Effective Load Carrying Capability (ELCC) method for determining the capacity value for solar. The current Commission Staff proposal has the ELCC value significantly declining over time with increasing levels of solar penetration. This analysis does not envision the potential for high penetration of EVs/PHEVs charging during the daytime when solar output is at a maximum.

By ignoring the significant potential benefits of VGI, the Staff’s proposed ELCC, if adopted, would devalue solar, which could seriously hinder additional solar deployment and in turn impede the state’s efforts to reduce greenhouse gas emissions. However, if the Commission were to consider the possible effects of on-peak EV/PHEV charging in determining the value of the ELCC for PV systems, the Commission could avoid sending such a potentially damaging market signal.

B. Long Term Planning and Procurement

Similarly, the potential benefits of VGI were not considered in the Commission's Long Term Planning and Procurement (LTPP) Track 4 proceeding, Docket No. 12-03-014, which was established to address the local capacity requirements for the LA Basin and San Diego areas after the announced permanent retirement of the San Onofre Nuclear Generating Station (SONGS). In its Proposed Decision issued on February 11, 2014, the Commission recognizes the value of Preferred Resources, including Demand Response, Energy Efficiency, and renewable energy, as well as energy storage, and encourages SCE and SDG&E to maximize use of these resources to replace the output from the shuttered SONGS facility. However, the Commission omits the significant potential benefits EVs/PHEVs have to address local capacity, ramping and ancillary services (particularly voltage support) in its proposed decision.

SCE included in its LTPP Track 4 comments and testimony a description of a proposed Preferred Resources Living Pilot (PR Pilot). The stated purpose of the PR Pilot is to test the abilities of various Preferred Resources in meeting local capacity requirements of the grid adjacent to the Santiago and Johanna substations in Orange County, near the shuttered SONGS facility. SCE chose these locations because, while there is no immediate capacity need, the utility anticipates 25 megawatts (MW) of annual growth in these areas. In its Proposed Decision in LTPP Track 4, the Commission also requested SDG&E create a similar program for the San Diego service territory as a means of testing combinations of Preferred Resources. We strongly recommend that the Commission require SCE and SDG&E to include testing of various Use Cases for VGI as part of this PR Pilot program. In addition to testing the capabilities, operability and reliability of VGI under each Use Case, the PR Pilot could also be used to identify market potential for VGI services, such as utility or third party aggregation, to better gauge the economics and viability of VGI related business opportunities.

It is critical that VGI be included in these PR Pilot programs to identify optimal mixes of preferred resources to meet local capacity needs under various circumstances, including diurnal and seasonal usage variations, as well as under scenarios such as the loss of major transmission or generating resources. Including VGI in these PR Pilot programs will also allow the CAISO,

utilities and Commission to see how the various Preferred Resources interact and provide invaluable data on the economic viability of various Use Case market opportunities and challenges.

C. Net Energy Metering

With regard to Net Energy metering (NEM), there are many potential complications for VGI that will need to be mapped out and addressed. There are implications for PV system owners who take service under NEM, as well as questions about the applicability of NEM to resources like EVs/PHEVs that can backfeed into the grid. For solar customers who add an EV to their residence, the type and battery capacity of an EV/PHEV will likely affect the size of their PV system under a NEM tariff. How and where that vehicle is used under potential VGI programs will also affect the estimated total annual consumption for a consumer when determining the size of their system and the potential payback for both the vehicle and PV system.

For example, under the NEM tariff, a customer is allowed to size their PV system to meet their annual energy consumption, including their EV(s), up to a maximum of 1 MW; any NEM generation in excess of annual consumption is compensated at a low price, per net excess generation rules (which the Commission set at the utility's Default Load Aggregation Point (DLAP) price, which currently averages around 4 cents/kWh). Most customers today charge their EVs at night at home, with some charging at work or during the day depending on the availability of charging stations. If, through this proceeding, the Commission determines that there is enough potential value in EV charging during the daytime at specific circuits in the distribution grid to incent the EV owners to charge primarily during the daytime, corresponding usage changes could impact the customer's annual residential consumption compared with what they had projected assuming they would charge primarily at home, resulting in a potential over-investment in their PV system. As noted above, the NEM customer is given only minimal financial credit for any generation in excess of their annual energy consumption, potentially

reducing the value of the solar energy they generate and affecting the return on their solar investment.

Alternatively, under a bidirectional power flow (Vehicle-to-Grid or V2G) program, if the Commission establishes or approves programs that allow utilities to discharge EV/PHEV batteries to provide afternoon/evening ramping service, a customer may end up charging more during the off peak nighttime hours than they otherwise would have, potentially causing them to under-size their system and not get full value under their NEM tariff. For example, if a customer who owns an EV/PHEV then purchases or leases a PV system for their residence, he would size the PV system to meet his total load, including the estimated EV/PHEV charging usage. This usage will be based on the vehicle/battery characteristics, the amount of driving he does and the state of charge of the batteries when he typically plugs in the vehicle to charge at home. If that customer then joins a V2G program that allows the utility to discharge the batteries to support the evening ramp, for example, leaving enough to get home plus a reserve for contingencies, he may end up returning home with a much lower state of charge than before joining the V2G program. If the vehicle has a sizeable battery pack, this could increase the amount of charging done at night, potentially resulting in an under-investment in the PV system and requiring the customer to purchase more energy from the grid.

Therefore, properly setting incentives for VGI services and proper sizing of PV systems is important for maximizing the grid benefits and greenhouse gas reduction, as well as ensuring fairness to all potential EV/PHEV and PV system customers.

At this time, Vote Solar is not proposing changes to the NEM program, but suggests the Commission establish a working group that includes current EV/PHEV and PV system owners as well as parties to this proceeding to identify potential issues associated with the interactions between NEM and V2G programs and solutions to these issues.

D. Interconnection

In Docket No. 11-09-011 (Order Instituting Rulemaking on the Commission's Own Motion to Improve Distribution Level interconnection Rules and Regulations for Certain Classes

of Electric Generators and Electric Storage Resources), Vote Solar previously noted that NEM distributed generation systems with added or enhanced energy storage should be entitled to exemptions to Rule 21 interconnection fees pursuant to the exemption, provided in statute, for NEM-DG systems without storage (Pub. Util. Code § 2827, subd. (g)). Grid integrated EVs/PHEVs similarly should be exempt from potentially applicable interconnection tariffs and fees so as not to create disincentives to program participation. This point might be obvious, as many charging facilities will not be associated with generation equipment and thus would clearly not qualify as customer generation facilities. When co-located with a NEM-DG system, however, this distinction might be blurred. We must accordingly be careful to avoid saddling distinct innovations with historic practices that will hinder customer buy-in.

Question 2. What immediate, near-term actions should the Commission undertake to support the development and implementation of VGI use cases and applications?

Response: As discussed in the response to Question 1, the Commission should immediately require consideration of the potential grid integration and flexible capacity benefits of VGI in each Use Case in the ongoing RA and LTPP proceedings. Specifically, the Commission should require Staff to modify the calculation of the ELCC to include the significant potential load shifting benefits afforded by EVs/PHEVs, in accordance with the Governor's ZEV Action Plan goals as well as the CAISO's VGI Roadmap. Doing so will not only send the appropriate market signals to encourage continued deployment of solar, but will also help the state meet its aggressive greenhouse gas reduction goals.

Further, the Commission should require SCE, SDG&E and PG&E to establish PR Pilot programs that include testing of the technical capabilities of VGI as a local capacity and ancillary services resource as well as testing the market opportunities and economic feasibility of various VGI business models. To begin with, the Commission could authorize the utilities to start with Use Case 1, Unidirectional Power Flow (VIG) with One Resource and Unified Actors, since it faces no serious barriers to implementation. At the same time, the Commission could authorize

the utilities to develop rules and tariffs for third party aggregators and begin designing a pilot program for Use Case 2, V1G with Aggregated Resources.

Along with the rules and tariff design for Use Case 2, the Commission should establish procedures for monitoring and assessing the potential value this level of VGI has for dealing with morning and evening ramps and mid-day over-generation potentially associated with very high levels of solar penetration. The Commission, working with the CAISO and utilities, should identify circuits in each utility's distribution grid where these services might be most valuable for inclusion in the PR Pilot program. The PR Pilot should also be designed to evaluate combinations of distributed PV, Demand Response, Energy Efficiency, as well as VGI and stationary energy storage resources.

Question 3. In consideration of the Use Case prioritization proposed in the Whitepaper, are there near-term actions that the Commission should avoid in order to not preclude progress on Use Cases considered to be more complex?

Response: For the V2G Use Case, the Commission should avoid making unilateral decisions on communication protocols and standards without consulting with vehicle and battery manufacturers and EV/PHEV charging equipment providers. It is important to work with national standards development organizations to ensure California's requirements are in line with standards that may be in development elsewhere around the country and around the globe. This will ensure continuity with other regions and help avoid a multi-market approach to vehicle, battery and charging equipment design.

While the V2G Use Case has the potential to provide the greatest benefits to the grid, it must be done in a way that ensures a satisfactory customer experience, maximizes the market potential for provision of V2G services, and ensures successful integration as a dependable grid resource. As we stated in our previous oral and written comments, the Commission must insure the program is designed with customer wants in mind and not perceived customer needs. Outreach to EV/PHEV owners is essential to gauge their level of interest in participating in V2G

service provision, as well as outreach to vehicle and battery manufacturers, charging equipment and service providers, and utilities.

We strongly encourage the Commission to drive towards V2G as expediently as possible, but with good foresight and learning from the proposed PR Pilot programs, coordination with any similar efforts outside California, and stakeholder outreach.

III. CONCLUSION

Vote Solar appreciates the opportunity to provide additional comments to help advance the objectives of the Rulemaking and looks forward to participating in the PHC.

Dated: February 19, 2014

Respectfully submitted,

/s/

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