

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 November 14, 2013)

**COMMENTS OF ENVIRONMENTAL DEFENSE FUND ON THE ORDER
INSTITUTING RULEMAKING IN THE ALTERNATIVE-FUELED VEHICLE
DOCKET**

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I. INTRODUCTION

Environmental Defense Fund (“EDF”) thanks the California Public Utilities Commission (“CPUC” or “Commission”) for this opportunity to comment on their alternative-fueled vehicle (“AFV”) proceeding, R. 13-11-007. As advocates for reducing greenhouse gases through smart grid policies and innovations in the transportation sector, this rulemaking is of high importance to EDF.

California’s transportation sector is the largest single source of greenhouse gas emissions, accounting for 38 percent of total emissions. As the Commission is aware, the state, which is home to roughly one-third of the nation’s electric vehicles (“EVs”), has adopted a broad set of air quality and climate change policies intended to substantially increase the number of AFVs in the state. Rapid adoption of EVs, among other cleaner transportation technologies, is essential to decarbonizing this sector. By eliminating tailpipe emissions, linked to a grid increasingly powered by clean renewable energy resources, EVs will reduce emissions of carbon dioxide and other harmful substances relative to existing gasoline-based technologies.

Sound policies implemented by the Commission can overcome key barriers to the expanded use of EVs. Time variant or dynamic pricing can help ensure that batteries are charged at times of the day that don't strain the grid and do more harm than good. Charging infrastructure needs to enable convenient charging and to be prevalent in those areas in which EVs are geographically concentrated. Finally, Commission policies should ensure adequate economic incentives for EVs – by properly valuing the grid services that EVs can provide, the Commission can increase their numbers in a responsible and effective way.

In addition, if integrated into the electricity grid thoughtfully, the state's growing EV population could create significant benefits to ratepayers, the investor-owned utilities (“IOUs”), and the environment. For example, in concert with well-crafted tariffs and incentive programs, EV batteries can provide reliability services; they can contribute stored up energy into the grid during peak demand and ramping periods, and recharge during periods when extra generation is available, particularly when the sun is at its highest, or wind resources are in oversupply relative to low nighttime demand.

To achieve these benefits, it is essential that electricity rates be structured appropriately and the necessary institutional structures be developed, at the right geographic levels. EVs are concentrated in particular areas – thus, charging infrastructure should be in numbers that reflect those geographic concentrations. In addition, more research should be conducted to determine what types of locations will best motivate EV purchases (i.e., if drivers are more likely to purchase an EV if there are charging stations in parking lots or the workplace, than the Commission needs to ensure that such locations are prioritized).

EDF recommends that through this rulemaking the Commission:

- 1) Enact rates and vehicle grid integration policies that encourage adoption of AFVs;

- 2) Coordinate this docket with other proceedings, particularly related to resource adequacy (“RA”), demand response (“DR”), residential rate redesign, and long-term procurement plans (“LTPP”);
- 3) Adopt policies fostering a grid that integrates lowest-cost and best-fit technologies that support the State’s environmental goals.
- 4) Explore financing mechanisms and different program focuses (e.g. private EV ownership, fleets, environmental justice concerns) that will enable broader use of EVs.

Studies of strategies to achieve sustainable levels of greenhouse gas pollution point to the need to achieve extensive electrification of the transportation sector. Policies adopted in these proceedings could encourage the rapid proliferation of AFVs, with concomitant economic and environmental benefits, as well as nurture a resource that can cost-effectively address emerging grid needs for peak and ramping power. Nothing less is at stake.

II. DISCUSSION

In this context, EDF offers the following comments on the Commission’s first two questions.

1. **What programmatic changes can be made to support 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?**

Structuring Rate Design

As stated above, a comprehensive assessment of and coordination with existing and proposed state energy programs and policies needs to be considered when formulating rules in this docket. This includes structuring rates to discourage battery charging when and where it

imposes costs on the grid, and encourage charging, discharging and other ancillary services integration where grid benefits can be produced. It will be appropriate to consider the potential for a variety of EV-related tariffs oriented towards, for example, residential use, fleets, parking lots and structures, as well as associated with distributed generation facilities. As well, all tariffs and programs will be most efficient if targeted geographically.

EDF is not alone in advocating for tariff structures that encourage off-peak charging, and that harvest the potential for EV batteries to act as grid storage devices, enabling them to serve as an energy resource that can be called on when supply is lower than demand, or to offset ramping when solar energy goes off-line in the evening hours.

Time-of-use (“TOU”) pricing pilots for EVs have been shown to be quite effective at incentivizing charging at off-peak times.¹ Given the excellent performance of pilot EV tariffs by California utilities, the development of time-variant, geographically-targeted tariffs should be an essential component of this proceeding. EV adoption will be encouraged if the vehicles’ full benefits to the transportation and electricity sectors are reflected in Commission policies.

Placement and Use of Charging Infrastructure

Rules adopted in this proceeding could lead to accelerated deployment of EV charging infrastructure, particularly as targeted to specific geographic nodes. The EV population tends to cluster in specific locations, such as urban, higher-income communities, while battery distant limitations require access to recharging stations throughout the state if these vehicles are going to

¹ A San Diego Gas and Electric (SDG&E) EV pilot recently assigned customers with EVs to three TOU rates with different prices for peak, off-peak, and super-off-peak charging periods. Assigning lower rates to off-peak charging led to a significant change in behavior. As SDG&E says, “the bottom line finding from the first year of this study is that TOU pricing rates in conjunction with a charging timer lead to the vast majority of EV owners charging overnight rather than during peak times...the charging timer appears to make it so easy to charge overnight that even a quite mild rate differential induces a strong tendency for overnight charging.”
<https://www.sdge.com/sites/default/files/regulatory/Attachment%204-SDG&E%20ELECTRIC%20VEHICLE%20REPORT.pdf>

be used for long-range travel. One barrier to EV adoption is “range anxiety,” (i.e., an inadequate number of charging stations to reliably get from Point A to Point B). EV concentrations may require different infrastructure-related tariffs and incentive programs than more dispersed EV use, and just as importantly, need to be matched with geographic-specific utility distribution characteristics. EDF encourages the Commission to adopt policies in this proceeding that accurately reflect the interaction between emerging EV populations and circuit level conditions.

As part of this proceeding, the Commission should examine how to support the appropriate mix of workplace, community-based and residential charging, while ensuring that workplace charging becomes a viable option for commuters.

Measuring the Social Impact of EVs

As part of this proceeding the Commission should consider ways to create more inclusive access to EVs by low-income and minority communities. Currently, EV characteristics and costs tend to make them unaffordable or undesirable for low-income communities. Yet, these same communities tend to suffer from higher populations of older, more polluting vehicles, heavy-duty truck traffic, and, as a result, poorer air quality. Campaigns like Charge Ahead California recommend stacking federal and state incentives in ways that increase EV access to hard-pressed residents, pay for increased sharing, and allow for innovative financing. In conjunction with such initiatives, attention needs to be paid to creating sufficient charging infrastructure to accommodate a growing EV population, rather than allowing disadvantaged communities to remain charging “deserts”.

Since low-income communities are more likely to house power plants and associated transmission infrastructure, encouraging EV adoption and related charging infrastructure in these areas may produce multiple environmental and grid benefits.

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

The Commission needs to institute a series of actions to support the development and implementation of the vehicle grid integration (“VGI”) use cases and applications. As we describe above, these standards should be established to sync with and maintain the integrity of other relevant proceedings, such as DR, RA, LTPP, residential rates, and the recently closed storage decision, as well as other state policies.

EDF also reiterates the need to harness EVs for their potential grid services, such as DR, peak shaving, and ancillary services, like voltage support. In addition, EDF recommends that the Commission consider the following in its development of VGI:

- **Evaluation of whether electrification is more broadly applicable.** As the Commission recognizes in planning on structuring an appropriate rate design for both light and medium/heavy-duty vehicles, there is a tremendous opportunity for growth in the medium and heavy-duty sector, as well as light-duty vehicles. Electrification of commercial fleets and goods transportation could be an important step in meeting emission reduction goals, supporting the grid, and producing the environmental benefits that light-duty vehicles are already beginning to demonstrate.
- **Exploration of grid services standards.** Much as the California Air Resources Board sets emissions standards for cars, the Commission might consider establishing grid service standards, by which cars and car manufacturers need to abide. As the white paper on VGI and use cases discusses, a potential roadblock to more complex use cases is the threat that EV warranties might be voided if they plug into the grid. Not only does this

element have the potential to cancel any grid benefits that EVs might contribute, but might disincentivize the purchase of EVs. Requiring batteries that can withstand plugging into the grid, contemplated in the white paper's fourth use case, and requiring car manufacturers to maintain warranties for vehicles when they do so will strengthen the EV market.

Similarly, the Commission could require incentives for parking structures. The Commission should explore the types of standards for charging infrastructure that commercial and residential parking lots should have, including appropriate incentives for these lots to contain charging stations and have EV owners choose to charge there. Such standards for garages and parking lots would enhance the ability of EVs to put energy onto the grid and would also enhance the capacity of EVs to provide storage services to the grid.

- **Establishing finance mechanisms.** In addition to the stacking of rebates and incentives mentioned above, the Commission should consider developing use cases and applications via finance mechanisms like on-bill repayment (“OBR”). Though traditionally used to pay for energy efficiency measures, OBR can work to make EVs a more economically viable solution, along with the grid benefits that are potentially embedded in their increased use.

III. CONCLUSION

EDF thanks the Commission for the opportunity to comment in this proceeding and looks forward to following the development of this docket.