

**DOCKETED**

<b>Docket Number:</b>	18-MISC-04
<b>Project Title:</b>	Vehicle Grid Integration Roadmap Update
<b>TN #:</b>	224762
<b>Document Title:</b>	Environmental Defense Fund Comments on VGI roadmap update
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	Environmental Defense Fund
<b>Submitter Role:</b>	Intervenor Representative
<b>Submission Date:</b>	9/20/2018 3:03:50 PM
<b>Docketed Date:</b>	9/20/2018

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*Submitted On: 9/20/2018*  
*Docket Number: 18-MISC-04*

**Comments of Environmental Defense Fund on VGI roadmap update**

*Additional submitted attachment is included below.*



To: California Energy Commission

From: Larissa Koehler, EDF Senior Attorney

Date: September 21, 2018

Re: *VGI Roadmap Facilitation* Informal Comments

## **Introduction**

Environmental Defense Fund (EDF) thanks the California Energy Commission (CEC) for the opportunity to provide initial comments on the *Vehicle Grid Integration Roadmap Update*. In general, EDF believes the CEC has crafted a thoughtful set of goals and issues to inform this update – and believes the process has the potential to ultimately create a space for the streamlined interconnection, strategic placement of increased electric vehicle service equipment (EVSE), and more robust consumer education needed to expand the electric vehicle (EV) market.

That being said, EDF believes the Roadmap Goals and Issues/Barriers could be further strengthened with some additions. As such, these comments focus on Question 1 and 2 posed by Staff: “(1) Are there goals missing from the list of proposed goals in the Excel workbook? If so, what is the goal and the issues/problems with achieving the goal?” and “(2) Are there issues/problems not identified for the proposed goals? If so, which goals and what are those problems/issues?”

## **Discussion**

*(1) Are there goals missing from the list of proposed goals in the Excel workbook? If so, what is the goal and the issues/problems with achieving the goal?*

EDF believes the CEC should add a goal that speaks specifically to establishing a market for vehicle to grid (V2G) capabilities – due to the nascent nature of the technology and the numerous issues that require exploration before bringing capabilities to scale. As stated in a recent report by Cenex evaluating the potential for V2G expansion, there are numerous barriers facing development of that market, which shows the need to

*...develop a clear understanding of the economics of V2G and the various potential revenue streams and as such to develop robust business models which enable clear identification and targeting of appropriate customer groups...this will enable hardware to be developed in line with the needs of these customers, therefore reducing costs and increasing the value to the customer.<sup>1</sup>*

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<sup>1</sup> <https://www.seev4-city.eu/wp-content/uploads/2018/08/V2G-Market-Study-2018.pdf> at 8

Issues that the CEC should consider as part of this include the following:

- How can the concern of battery degradation – and subsequent impact on manufacturer warranties – be mitigated?
- How can the complete set of services that V2G can offer be adequately utilized? That is, what is the appropriate revenue to ensure EV customers are properly incentivized to, for example, provide ancillary services and dispatch back to the grid?
- How can utilities and transmission operators work with third party aggregators to make V2G as effective and efficient as possible – that is, how can those entities work collaboratively to ensure V2G provides benefits to the customer, the environment, and the grid?

Additionally, given California's ambitious clean energy goals, it would be valuable for the CEC to have an explicit goal for developing the necessary structures to ensure vehicles charge with clean energy and exploring the potential capability of V2G to help integrate renewable energy and reduce curtailment. These issues will need deliberate incentive and program design, as well as flexible market structures that allow for vehicles and customers to charge effectively.

*(2) Are there issues/problems not identified for the proposed goals? If so, which goals and what are those problems/issues?*

Below, EDF lists additional problems/issues that should be considered for certain goals. For ease of organization, each goal for which EDF has additional suggestions is replicated below.

1. Estimate the economic potential for vehicle-grid integration under medium and long-term scenarios.
  - a. The CEC should consider the fact that the economic and societal benefit of electric vehicles will depend at least in part on how successfully these vehicles can integrate renewable energy and how much of a fuel cost savings customers can see. Put another way, though electric vehicles are inherently cleaner than their gasoline- and diesel-powered counterparts, their maximum benefit will come from ensuring that they are fueled mostly or solely by *clean* electricity. In addition, consumers – particularly those in the medium and heavy-duty space – will need to see the business case for transitioning to electric vehicles. Thus, fuel cost savings relative to gasoline and diesel need to be apparent. Both of those critical issues will depend on well thought-out rate design that speaks to the needs of the grid and the customer, as well as accompanying technology that can help make managed charging more feasible and effective (e.g., ensuring charging stations can readily and directly communicate with the vehicle, on-site solar + storage).
3. Reduce cost of electrification by measuring how emerging opportunities can utilize vehicle-grid integration technologies.
  - a. In “characterizing the grid impacts of large scale transportation electrification for medium duty and heavy-duty vehicles...to provide reliable service and minimize grid upgrade costs,” the CEC should evaluate how different levels of charging (e.g. fast charging, Level 2) can impact the grid. For example, it will be necessary

to evaluate and manage spikes in energy usage that may occur from a simultaneous increase of medium and heavy-duty vehicles and the need for more rapid charging.

4. Prioritize and track benefits of managed PEV charging to low-income consumers and disadvantaged communities.
  - a. EDF agrees that environmental and air quality outcomes need to be better integrated into utility resource planning, as shown by the recent IRP plans filed by load-serving entities. A related need is more robust reporting requirements, as evidenced by the wide range of emissions analyses presented by load-serving entities in their IRPs. These reporting requirements should include the amount and timing of load, the number of EVSE deployments in areas identified by CalEnviroScreen as burdened, and, to the extent feasible, quantification of air quality improvements.
  - b. The high upfront cost of vehicles is still a significant barrier, particularly in low-income and disadvantaged communities, which are too often at most significant risk of harmful pollution. As such, the effectiveness and sufficiency of current incentives and rebates – as well as how well they are marketed (e.g. whether they are in multiple languages, how comprehensive the information is) needs to be explored.
  - c. Existing and ongoing initiatives undertaken by communities and local governments in low-income and disadvantaged areas, such as the Green Raiteros project from the LEAP Institute in the City of Huron, should be engaged to help pilot out V2G capability in low-income communities, while additional electric vehicle deployments are being planned and implemented. To that end, it would be useful to have a comprehensive understanding and inventory of those various efforts in low-income communities and how they can positively or negatively impact EV deployment and grid integration as a whole.
5. Enhance the consumer experience.
  - a. In addition to the issues laid out by the CEC in the Excel spreadsheet, more emphasis needs to be put on the point of sale. Much as utility pilot programs as part of the SB 350 transportation electrification applications have focused on educating car dealers to be able to give valuable information to customers, the CEC should consider leveraging that pilot and ensuring that consumers receive important – and correct – information about EVs, rate design, and rebates/incentives.
6. Increase the potential number of and readiness of future EVSE site hosts.
  - a. A core issue of many CPUC proceedings that should be considered here is whether utility ownership is appropriate. EDF contends that it is – by giving the customers the option for utilities to take care of purchase, installation, and maintenance, the purchase of an EV may be more attractive. This can be a critical component of growing the EV market, particularly in the more nascent

medium and heavy-duty sectors. As such, the CEC should consider whether maintaining a utility ownership option is appropriate.

9. Develop advanced battery and charging technologies.

- a. In addition to the list of issues described by the CEC, EDF believes exploration of second life batteries and analysis of battery price trends is warranted. Exploring whether batteries can have a useful second life can further strengthen the environmental case for a transition to EVs, since battery production and disposal still cause concerns over harmful emissions. In addition, the CEC should analyze price trends of battery components that may cause fluctuations in battery price. Though battery prices are anticipated to continue to decline, increases in the prices of materials can be problematic, as batteries are the bulk of a vehicle's cost. Working with Bloomberg and other analytical firms may aid the CEC in better forecasting the trend of battery prices – and, consequently, vehicle prices.

13. Identify current and emergent needs and determine benefits

- a. It is important for the CEC to look broadly at needs and benefit opportunities that can be monetized for third parties and provide useful benefits for utilities. EVSE should be located, where feasible, where they help integrate renewable energy, provide ancillary services, and avoid unnecessary upgrades to the transmission and distribution system. Thus, benefits from potential deployments should be assessed for specific grid areas, not just aggregated at the state level. In order to be most effective, this analysis should be tied to a process like the CPUC's Locational Net Benefits Analysis (LNBA) (part of the distributed resource plan proceeding) to help reveal the potential and comparative value of these investments.