

**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  
THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION**

The California Independent System Operator Corporation (the ISO) hereby files these comments in accordance the schedule established by the Order Instituting Rulemaking issued on November 22, 2013.

**I. Introduction**

On November 22, 2013, the California Public Utilities Commission issued Rulemaking 13-11-007 to address issues relating to the expanding use of alternative-fueled vehicles in California.<sup>1</sup> The ISO supports the CPUC's initiative to examine how to expand the use of alternative fueled vehicles, including vehicle to grid applications. The ISO believes electrification of vehicles will serve the long-term clean energy goals of California and the reliability needs of the bulk power system. As the CPUC is aware, the ISO is facilitating discussion of a draft roadmap to explore vehicle-based grid services.<sup>2</sup> This roadmap is a collaborative effort of the staff of the ISO, CPUC and the

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<sup>1</sup> *Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Programs, Tariffs, and Policies.* (Order Instituting Rulemaking 13-11-007).  
<http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M081/K996/81996327.PDF>

<sup>2</sup> <http://www.caiso.com/Documents/DraftVehicleGridIntegrationRoadmap.pdf>

California Energy Commission to help assess steps needed to meet the Governor's target to support 1.5 million zero emission vehicles on California roads by 2025.<sup>3</sup>

As stated in the CPUC Energy Division's white paper, alternative fueled vehicles have the potential of offering services that provide different values to different stakeholders. Use cases can help the CPUC and parties to this proceeding assess these value streams and develop a framework to address regulatory and technical issues. The ISO strongly recommends, however, that the CPUC articulate guiding principles for this proceeding through an Assigned Commissioner's Ruling. These principles should serve to develop a framework for vehicle grid integration and assist the CPUC in assessing the value of different use cases. The ISO recommends that these guiding principles reflect the need (1) to reduce the transportation sector's contribution to greenhouse gas emissions; (2) to enhance the ability of California's citizens to participate in vehicle to grid integration on a voluntary basis; and (3) to maintain or enhance the safe and reliable operation of the electric grid. Any framework or policy developed based on use cases should satisfy all three of these principles.

**II. The Commission's inquiry in this proceeding with respect to vehicle grid integration issues should start with basic use cases to assess the impact of vehicle charging on the electricity grid and the various objectives of interests involved.**

In this proceeding, the ISO recommends that the CPUC examine basic use cases to understand the impact of electric vehicle charging on the electric grid and the objectives of various interests involved. This approach will provide a foundation for the CPUC to assess progressively complex attributes of electric vehicle participation as a

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<sup>3</sup> California Executive Order B-16-2012 <http://gov.ca.gov/news.php?id=17472>

grid resource. The ISO strongly believes that managed charging on the distribution level by a single electric vehicle or across a fleet of electric vehicles could provide meaningful benefits to both the electric vehicle owner/operator as well as the grid. These benefits could include managing end user electricity costs as well as grid reliability issues, such as reshaping load consumption and reducing peak demand. To achieve these benefits, however, California must first ensure that the electric vehicle load does not create new reliability concerns for the transmission and distribution system.

Assessing the costs and benefits of managed electric vehicle charging as a load and how that case addresses various objectives is a prudent first step. Thereafter, the CPUC can address the technical and regulatory complexity of bi-directional power flows from electric vehicles. As referenced in the Order Instituting Rulemaking, the ISO is working with Southern California Edison and the Department of Defense to interconnect electric vehicles as a resource that can participate in the ISO's energy and ancillary service markets.<sup>4</sup> This effort will produce information to inform the CPUC's consideration of generic policies and rules to promote the use of electric vehicles as supply resources using bi-directional power flows. These policies and rules should ultimately seek to scale the participation of electric vehicle services to bolster the safe and reliable operation of the grid.

As vehicle grid integration use cases become more complex, additional regulatory and technical barriers will also increase in complexity. For example, the settlement of electric vehicle load participating across both retail and wholesale markets

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<sup>4</sup> See Order Instituting Rulemaking 13-11-007 at 16, *citing* CPUC Resolution E-4595 issued July 15, 2013 <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M071/K731/71731238.PDF>

will be an issue. The CPUC may need to explore how to define and treat load that is used for restoring an electric vehicle's charge for transportation purposes as opposed to how to treat electric vehicle load utilized for retail or wholesale grid services. When a resource comprises a combination of different assets and technologies such as solar photovoltaic, stationary storage and demand response, these interconnection issues only increase in complexity.

**III. The CPUC should begin its inquiry into vehicle grid integration by exploring how to facilitate sending electric vehicles charging signals that align with transmission and distribution conditions or seasonal load patterns.**

Before undertaking an examination of complex use cases, the ISO recommends that the CPUC start by examining policies and rules for when, how, and where an electric vehicle may participate as a load modifying and reshaping resource on the distribution utilities' systems. At this time, electric vehicle owners lack an opportunity to participate in any type of real-time retail grid service or program outside of becoming a wholesale market participant. This fact is forcing electric vehicle owners to examine participation in the ISO market as a wholesale grid resource, which arguably creates more complex regulatory and technical challenges. The ISO believes less complex retail opportunities exist for vehicle grid integration. In this regard, the absence of retail rate structures that adjust dynamically to grid conditions or seasonal load patterns is a problem.

With the longer-term view towards rates providing proper charging signals, an important step that the CPUC should consider now is encouraging the development of a hierarchical method of signaling where transmission level needs can be sent to the utility distribution companies who can consume and further refine the signal before

transmitting the signal to devices at the distribution level. Experience with such a program may provide useful information to explore other vehicle grid integration opportunities, including direct participation in wholesale markets similar to the proposed Department of Defense projects.

**IV. The ISO agrees with the preliminary category and scope of this rulemaking and the determination not to hold hearings.**

The ISO generally concurs with the scope of this Rulemaking as well as the proposal to establish two separate tracks (1) to evaluate the potential and value of vehicle-grid integration, including the use of vehicle batteries for demand response and energy storage; and (2) to develop new alternative fuel vehicle tariffs in each of the three large investor owned utilities service territories. The ISO does not believe hearings are necessary to adopt policies and rules and general applicability governing utility programs for alternative fuel vehicles. The ISO also agrees with the preliminary categorization of the proceeding as quasi legislative. The CPUC should consider facilitating additional workshops to address use cases and associated regulatory and technical issues. The ISO also appreciates that the Rulemaking states that CPUC intends to collaborate with other state agencies and the ISO. In this regard, the CPUC should coordinate the subject and timing of workshops in this proceeding with any activities in the ISO stakeholder process to develop a roadmap to enable vehicle-based grid services.

Dated: December 13, 2013

Respectfully submitted,

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