

**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 CALSTART IN RESPONSE TO ORDER INSTITUTING  
RULEMAKING AND SCOPING MEMO**

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December 13, 2013

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**I. INTRODUCTION:**

In accordance with the November 14, 2013 Order Instituting Rulemaking (“OIR”) and guidance provided by staff at the December, 4, 2013 workshop on Vehicle-Grid Integration (“VGI”) and financing (“Workshop”), CALSTART submits the following comments.

**II. BACKGROUND AND EXPERTISE:**

CALSTART is a nonprofit clean transportation technologies consortium with over 20 years of experience working with industry, government, and other stakeholders on technology and policy issues related to alternative fuel vehicles. Recent discussions with our network underscore the fact that issues related to utility rate structures, infrastructure costs, and financing are critically important to the growth of this market. In providing comments on the scope and focus of this rulemaking, we are drawing on years of activity in this area:

- **E-Truck and Bus Fleet Issues:** Since 2001, CALSTART has been managing a program called the High-Efficiency Truck Users Forum (HTUF), a national effort to enable and expand the hybrid and electric truck markets. CALSTART is currently managing electric and hybrid truck purchase incentive programs in California, New York, and Chicago. Among CALSTART’s 150 member companies are several leading fleets who are on the forefront of the electric truck market, including UPS, Frito-Lay, and FedEx Express. We have also been working for several years on zero emission bus issues and we regularly communicate with manufacturers, fleets, and suppliers in this area.
- **Workplace Charging:** CALSTART held the first major workshop focused on workplace charging at Google HQ in June 2012. Drawing on lessons learned at this and other workshops, CALSTART has published a “Best Practices” document outlining the key steps companies who are pursuing workplace charging should consider. CALSTART Co-Chairs

the California Plug-in Electric Vehicle Collaborative (CPEVC) Working Group on Workplace Charging.<sup>1</sup>

- **Vehicle-Grid Integration and V2G:** CALSTART staff has expertise in doing analysis and calculations on the potential of Vehicle-to-grid. Dr. Jasna Tomic did early work on V2G in 2000 and published some of the first papers laying the fundamentals of V2G. More recently we provided analysis to encourage the DOD to launch a V2G deployment testing. Dr. Tomic's work includes a focus on grid stabilization and commercial fleets.<sup>2</sup> We continue to analyze the potential of V2G to support electrification of transportation of both commercial and light-duty vehicles.

CALSTART is pleased that the Commission, in this OIR, is thinking broadly about how to capture the grid benefits provided by effective vehicle-grid integration and about how to encourage broader and smarter vehicle electrification. We look forward to working with the Commission, the other parties in this proceeding, and our industry network to expand the use of alternative fuel vehicles in California.

### **III. PROCEEDING SCOPE:**

CALSTART is actively engaged with the California legislature, the Air Resources Board, and the California Energy Commission to advance the electric vehicle industry and market in California. With the passage of Assembly 8 and Senate Bill 359 in 2013, near term funding for vehicle incentives and investment in next generation technology has been secured. CALSTART is now working in partnership with others to find additional funding to meet the growing demand for electric cars, trucks, and buses, but vehicle purchase incentives are only part of the solution.

Some of the most prominent remaining barriers for growing the electric vehicle sector are related to infrastructure costs and rate structures. Specifically, the cost of installing charging infrastructure

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<sup>1</sup> Additional information, including the Best Practices guide, can be found at [www.evworkplace.org](http://www.evworkplace.org).

<sup>2</sup> Tomic, J. and W. Kempton, "Using Fleets of Electric-drive Vehicles for Grid Support," *Journal of Power Sources*, 168, 268-279, 2007.

Kempton, W. and J. Tomic, "Vehicle-to-Grid Power Fundamentals: Calculating Capacity and Net Revenue," *Journal of Power Sources*, 144, 268-279, 2005.

Kempton, W. and J. Tomic, "Vehicle-to-Grid Power Implementation: From Stabilizing the Grid to Supporting Large-Scale Renewable Energy," *Journal of Power Sources*, 144, 280-294, 2005.

Tomić, J. and Jean-Baptiste Gallo, *Using Commercial Electric Vehicles for Vehicle-to-Grid*, EVS26 Los Angeles, California, May 6-9, 2012.

at existing commercial facilities creates a major barrier for some fleets interested in increasing their use of alternative fuel vehicles. A second issue, of great importance to the transit sector as well as some commercial fleets, is the high costs of demand charges and the need to continue operating without interruption.

Broadly speaking, we agree with the proceeding scope, category, and identified issues. In particular, we encourage the Commission to ensure that the following challenges are addressed as part of this proceeding:

- **Infrastructure costs for commercial fleets:** The high cost of installing EV chargers for fleets and at distribution centers is a barrier to broader electrification and grid benefits. Most fleets can use relatively low cost 240V EVSE's for charging their trucks. However, the cost of bringing the power to the EVSE's can range from \$5-12,000, thereby making the over-all business proposition for electric trucks questionable. The largest costs are in upgrading the panels and doing the necessary trenching to power the EVSE's. We would encourage the CPUC to consider whether the panel upgrades, "trenching", and laying of additional power lines should be an expense covered by normal utility operations.
- **Infrastructure costs for workplace charging:** Many employers and commercial property owners are interested in providing charging for employees and tenants, but will only do so if it makes economic sense. Our work to date shows that the biggest economic challenge is not in purchasing the EVSE, but rather in bringing the necessary power to the desired EVSE location. Like with commercial fleets, we encourage the CPUC to consider the role of the utility in making these investments to unlock the potential grid benefits associated with well-integrated workplace charging.
- **Demand charges for transit agencies, workplaces, and commercial fleets:** Almost every major bus maker in North America, along with some start-ups, are bringing electric product to the market. Transit districts can often secure federal funds to pay for capital costs, but covering all operating costs remains a challenge. Demand charges can have a significant and negative impact on the business case for electric buses. Demand charges may also be of concern for industrial customers with e-truck fleets, as well as some employers providing workplace charging. We encourage the Commission to work with parties on a long term solution for demand charges that encourages electrification and mitigates costs.

At this time, we are not prepared to offer specific recommendations on how to address the three key issues we have identified above. Rather, we would like to ensure that these issues are considered and addressed in this proceeding as our members have identified these as high priority items. We are also not yet able to provide responses to the specific questions posed by the Commission, although we do intend to provide more specific feedback as the proceeding moves forward.

**IV. CONCLUSION:**

CALSTART appreciates this opportunity to comment on the OIR, and looks forward to working with the Commission and stakeholders in this proceeding to ensure the successful commercialization of PEVs while capturing important benefits for the grid.

Respectfully submitted,

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