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TO: California Energy Commission Dockets Office
RE: Docket Number 10-ALT-1; 2011-2012 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program: **Siting and Managing Public Charging Stations for Plug-in Electric Vehicles.**
DATE: August 10, 2011

A tremendous amount of federal, state and local resources are currently going into helping cities and regions plan for, site and manage public plug-in electric vehicle (PEV) charging stations. For many localities this is a new and challenging planning process involving two types of decisions. The first decision is where to locate public charging stations to best meet the needs of PEV owners as ownership increases over time and space. The second decision is how to structure and manage the public-private partnership with the firms that will operate these public charging stations.

We agree with the CEC that there is an "absence of a [public charging] business model."[1] To address this gap in planning capacity, and to support better decision making, we propose to undertake two sets ofresearch activities. Additionally, we propose using Los Angeles County as a case study, or proof-of concept, but hasten to point out that our methods can be replicated for any region of the state or country. Our broader aim is to develop decision support tools, methods and best practices that will guide public officials (and charging station service providers) when siting and managing charging stations.

Answers to the following set of research questions will lead to the **development of a decision support tool for siting PEV charging stations:**

1. Based on the residential location, residential charging conditions and commuting patterns of prospective PEV owners, along which commuting corridors would the placement of publicly-accessible charging stations produce the greatest social benefits?
2. How will the spatial distribution of PEV-owner residences and commuting patterns change as the market grows and matures? How will market growth affect the optimal spatial deployment of public charging stations along commuting corridors?
3. Based on expected vehicle charging levels and commuting distances, how closely spaced do public charging stations need to be to provide an acceptable level of comfort for prospective PEV drivers?
4. In the past, how did charging station service providers and public officials decide where to site charging stations? How would this decision-making process be characterized today?
5. Based on the existing placement and performance of charging stations along PEV-intensive commuting corridors, where are there significant gaps in the existing network of charging stations?

[1] Smith, Charles, Miles Roberts, Jim McKinney. 2011. ***2011-2012 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program*** Committee Draft Report. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2011-006-CTD. Page 40.

6. For the typical PEV commuter, will charging stations along their commuting corridor be managed by different entities? If so, will this significantly complicate access to stations for the typical PEV commuter?
7. How effectively do existing information technology services identity the location, cost and performance characteristics of charging stations?

Station Siting Deliverables:

1. A GIS-based model that combines dynamic projections for where PEV adopters will be located, and where publically available charging infrastructure will be needed.
2. Spatial characterization of the residential location and workplace commuting patterns for early and middle-market adopters.
3. A spatial analysis of the location, cost and performance of current and planned charging stations along PEV-intensive commuting corridors.
4. A gap analysis based on current and planned charging station locations.
5. An assessment of current siting decision criteria, processes, and suggested best practices.
6. A consumer-oriented system of classifying commuting routes in terms of public charging station accessibility.

Our second research activity focuses on **tools for lease arrangements and organizational processes for charging station installation and management**. To provide officials with best practices and principles we will answer the following questions:

1. How should public officials calculate the social opportunity costs of leasing a public parking space to a charging station operator?
2. What are the broader values and tradeoffs at stake in the design of lease arrangements for (a) the public sector, (b) the charging station operators, (c) PEV owners, and (d) non-PEV users of the transportation system?
3. More specifically, how should public officials determine the lease rate? How long should the lease be?
4. What protocols should observed (and included in contracts) to ensure that public charging stations are operated optimally? What performance criteria should be reported to public officials?
5. What should be the conditions for lease renewal as the market becomes more competitive?
6. How should the costs of decommissioning and disposal of charging equipment, as well as parking space restoration be assigned within the lease?
7. What organizational processes are most effective for coordinating across many public and private stakeholders (i.e., electric utilities and city/county departments)?

Public Sector Lease Arrangement Tools & Organizational Best Practices Deliverables:

The management guide will complement the GIS tool, and will cover all aspects of charging station management from technology procurement and service provider selection, to replacement costs and service provider contract termination. An implementable model lease arrangement will be provided, in addition to model organizational and process approaches appropriate for streamlining PEV-related business, such as permitting and coordination across various stakeholders (e.g., electric utilities, building departments, parking management departments, etc.). The guide will also cover budgetary issues, such as capital costs, operations and maintenance costs, and revenues. In particular, foregone parking revenues –

a large source of revenue for many localities – will be discussed. The guide will address parking space requirements, parking location, parking prices, charging station safety issues, Americans with Disabilities Act (ADA) compliance, and electricity pricing for charging vehicles, among other issues.

The Luskin Center has been working closely with the Southern California Association of Governments (SCAG) on addressing regional PEV readiness, as identified in the *Investment Plan*.[2] The Luskin Center is supporting SCAG's application for a CEC grant for regional PEV readiness. In addition to the SCAG grant, the Luskin Center is discussing a partnership with the Westside Cities Council of Governments[3] to develop planning tools for effective management of electric vehicle infrastructure.

The Luskin Center thanks the CEC for consideration of this docket submission and hopes that these comments are helpful to the development of an effective research and policy agenda. For further information please contact the following persons:

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[2] Smith, Charles, Miles Roberts, Jim McKinney. 2011. ***2011-2012 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program*** Committee Draft Report. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2011-006-CTD. Pages 30-31.

[3] This includes the County of Los Angeles and the cities of Beverly Hills, Culver City, Los Angeles, Santa Monica, and West Hollywood.