Comments on CPUC White Paper entitled:

Light-Duty Vehicle Electrification in California
Potential Barriers and Opportunities
From the Policy and Planning Division
Dated 5/22/09

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Overall:
This is an excellent paper that will serve as a reference document for many of us. We at Coulomb have a couple of suggestions.

1) **Page 32:** There is a comment that Demand Response would require a contract between the PEV driver and the utility.

   This may be over simplified. There are up to four players: A) The utility, B) The driver, C) The EVSE owner, and D) A clearing house that takes money from the driver and distributes it to the appropriate utilities.

   This complexity comes in part because the customer is mobile and may not have a credit and billing relationship with the utility where they charge. There are two municipal utilities and one IOU within 5 miles of my home, and I need to charge in all of them. Also, demand response may be implemented in EVSE because no cars implement it yet but some EVSE does.

   It seems that the at least the EVSE owner, PEV owner, and utility need to be addressed as 3 entities. Consider the cases of the Multi-dwelling unit or the public parking structure.

2) **Page 34** there is a comment that 76% of drivers will charge during off-peak hours.

   This is probably not the relevant statistic. What is interesting is how much charging happens during on-peak hours. A high number of drivers will charge during both off-peak and on-peak, primarily while sleeping and while working. According to a UC Davis study 80% of drivers will charge more than once a day.

3) **Page 60:** We have more suggested conclusions – integrated meters.

   Rather than rely so heavily on subsidies, we suggest that one way to both reduce the cost to deploy PEVs and improve the efficiency with which they roll out is to encourage “integrated metering”. For approximately $10 in parts cost, a metering device can be integrated into EVSE.
This would allow time-of-use monitoring and time-of-use control without the need for an independent meter purchase and installation. To enable this method of addressing some of the key issues, this type of metering solution needs to be embraced by the IOU’s and meter approval needs to be streamlined. These meters can communicate to the utility through communicating to an AMI meter, or any other networking method.

4) **Page 61: We have more suggested conclusions – new billing models**

We will need new billing models in recognition of the mobile customer. This is a customer with whom the serving utility has no credit and billing relationship. The mobile consumer may charge his vehicle in several different municipal utilities and multiple IOU’s. Also, the billing mechanisms need to work for the case where the EVSE is owned by a private parking lot owner. Here are some models that can work:

a) Something like Fastrak or EZPass where the driver puts money into a holding account and an intermediary disburses the money to utilities or to EVSE owners that are ratepayers.

b) A system whereby when a driver charges, a billing record is sent to the relevant utility or EVSE ratepayer.

5) **Page 66: We should require every garage and parking lot built to include wiring for future EVSE.**

6) **Page 66: We should allow load sharing**

An electric circuit should be able to be oversubscribed but managed. This means that if all EVSE on a single circuit were in use at once at full capacity, in the single family home, multi-dwelling unit, or in the public, the circuit would be overloaded, except that a control system moderates that load to ensure that the circuit is indeed not overloaded. This is frequently done in home where a single 20 Amp circuit could easily have 60 Amps worth of receptacles on it and the homeowner is responsible for not overloading the circuit. It may mean also that the EVSE circuit could have other mutually exclusive loads, like pool pumps or clothes dryers. The circuit needs to be shared by a management circuit that prevents overloading.

7) **Appendix I: E9 should apply broadly**

   a. It should apply to all vehicles from Segways to Tesla Roadsters.
   b. It should apply for residential and non-residential applications.