



Mercedes-Benz

DOCKET

10-ALT-01

DATE Mar 31 2011

RECD. Apr 01 2011

Mercedes-Benz
Research & Development
North America, Inc.
A Daimler Company

March 31st, 2011

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 10-ALT-1
1516 Ninth Street
Sacramento, CA 95814-5512

Dear Commissioner Boyd and California Energy Commission staff:

Thank you for the opportunity to provide comments on the "2011-2012 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program, Draft Staff Report." We applaud the CEC for the current funding of public electric vehicle (EV) infrastructure as outlined in the investment plan and in specific for having the foresight to see the need for broad public level 2 and DC fast charging capabilities and we think the level of funding as outlined in the investment plan is appropriate. However, given the current level of funding from other sources already directed at level 2 charging points we respectfully request that the current allocation of CEC funding might be reconsidered in favor of more DC or co-located AC/DC charge point projects.

Daimler also believes that both battery electric and hydrogen fuel cell electric vehicle technologies will be needed in the market place and it is unfortunate that the move toward funding infrastructure for plug-in electric vehicles (EVs) has come at the expense of hydrogen. We suggest that a more balanced portfolio of funded projects which includes support for light duty hydrogen stations would reflect the near term marketing efforts of several OEMs.

As you are aware, Daimler is strongly committed to bringing commercial light duty battery electric drive technologies to market as our recent announcements for series production of our Smart EV in 2012 indicates. In addition, as of January 2011 we began delivering for lease to the general public a



Mercedes-Benz - are registered trademarks of Daimler AG, Stuttgart, Germany

Mercedes-Benz
Research & Development
North America, Inc.,
850 Hansen Way
Palo Alto, CA 94304
Phone 1 650 845 2500
Fax 1 650 845 2555
www.mbrdna.com

limited number of Smart EVs throughout the US market. The introduction of these vehicles is the fruition of deliberate planning for more than a decade by Daimler.

Despite this long term planning there are many items essential to the market success of EV technologies which are not within Daimlers control. One critical item is a ubiquitous DC charging infrastructure for plug-in EVs that will facilitate a consumer driving experience similar to their current lifestyle which is facilitated by the more than 13,500 gasoline stations in California alone. There are a many projects currently funding light duty level 1 & 2 charging infrastructure both in California and nationally but as the chart below indicates these charge levels will not approach current customer experience for vehicle fueling with existing infrastructure limitations.

Refueling time of ICE vehicle
Flow rate of filling station ca. 10 gallons per minute
Fuel efficiency of ICE vehicle ~ 30 mpg
Refueling time = 20 seconds for 100 miles
Power needed to refuel an EV as fast as an ICE vehicle
Energy consumption 25 kWh for 100 miles
Refueling time same as ICE vehicle
Required charging power ~ 5 MW

For market success of plug-in EVs the customer will expect performance comparable to current experience, however, level 2 charging alone can never reach refueling times of combustion engine vehicles without some form of fast charging which is not feasible without investment in the necessary infrastructure. Daimler believes that for battery electric drive technologies to be successful it is vital that consumers not see re-fuel/re-charge times as a negative. With hydrogen technology we already have re-fueling times at three minutes while maintaining 250 mile plus ranges. This is not the case with level 2 battery charging infrastructure in the US. Low refueling times are at the heart of the customer experience for our battery electric drive technologies. It is one reason we believe so strongly in the viability of any technology which reduces these fueling times without impacting range. DC fast charging is one such enabling technology.

Current arguments for BEV infrastructure requirements follow the logic that most consumers will be able to do 80% of their daily driving needs using only private charging. One must only look to information provided in the recent US census to see this is not the case.

- There are only ~74 Million private garage/carports in the US for the ~193 Million light duty vehicles. (2009 numbers)

The result is that less than 39% of consumers will have access to private charging.

We are already seeing indications from BEVs currently coming to market that some consumers are choosing to forgo installation of EVSE. Again, possibly the belief is that, for about 80% of their daily driving needs they will be able to sufficiently charge from existing household 110 volt supply or that there is sufficient existing public infrastructure. This may be the case for early adopters having to compete for charge point access with a small number of BEVs and the use of alternate vehicles for longer trips. It is unlikely to be the case as success of BEVs requires market penetration into a broader consumer base where purchase decisions will be based on vehicle capabilities, the prohibitive expense of private EVSE installations and lack of alternate transportation options.

To further incentivize consumers toward the viability of electric vehicles the cost of the vehicle for a given performance expectation must be considered. When discussing BEVs this means reducing the expense of the battery while maintaining the driving range. In the current generation of batteries there is no magic bullet for reducing vehicle cost except for reducing battery size. This cannot be done without sacrificing range which would make the choice of battery electric vehicles as a viable option even less likely. The only way out of this loop is increasing the number of DC charging points to where fast public charging is a viable alternative for longer trips. A ubiquitous public DC fast charging infrastructure could allow reduction of battery size and initial vehicle costs with same convenience / utility level for the customer.

- This will facilitate quicker consumer acceptance of technology

In closing, we encourage the CEC to continue looking for opportunities to fund public level 2 and DC fast charging infrastructure. This will enable all vehicle manufacturers to bring plug-in EVs to the market place that more closely approach a customer's current experience as one viable alternative for their transportation needs.

Regards,

A handwritten signature in black ink, appearing to read "John Tillman", with a long horizontal flourish extending to the right.

John Tillman
Mercedes-Benz Research & Development North America, Inc.
Manager Regulatory-Affairs