better place

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Via Email & Hard Copy
docket@energy.state.ca.us

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 09-ALT-1
1516 Ninth Street
Sacramento, CA 95814-5512

RE: Docket number 09-ALT-1 Electric Drive Technical Workshop

Dear Sir/Madam,

Better Place would like to take this opportunity to thank the California Energy Commission (CEC) staff for their work in preparing to draft the 2010-2011 AB118 Investment Plan and for this preliminary opportunity to offer our initial comments. Better Place strongly supports the CEC's commitment to electric vehicles (EVs) as reflected in its decision to allocate $46 million in incentives toward EV purchases and infrastructure in the 2008-2009 Investment Plan and in particular the $12 million for infrastructure. Electric vehicles powered by renewable energy offer the most cost-effective and environmentally responsible alternative to California's current transportation model.

As the CEC develops the 2010-2011 AB118 Investment Plan, Better Place recommends the inclusion of EV battery switch stations as an option within the EV infrastructure category. We believe the CEC's investment into electric vehicle infrastructure should include the option of refueling technologies that let electricity compete with gasoline and alternative fuel infrastructure. For those alternative fuel types (e.g. hydrogen, ethanol, natural gas, and propane), the 2008-2009 Investment Plan promotes refueling stations that are comparable to the current gasoline/diesel infrastructure in that they allow drivers to "gas and go" in less than ten minutes. With electric vehicles, this rapid refueling is provided by battery switch, since charge stations alone do not offer complete refueling in less than ten-minutes. This inclusion gives the State more options in 2010 and 2011, without any funding obligation and provides an additional tool in both reducing our petroleum dependency and greenhouse gas footprint.

Major manufacturers like Mitsubishi Heavy Industries, Renault[1] and others have all noted the benefits of battery switching. Most recently, Tesla a pioneer in the re-emergence of the EV industry has noted that its next generation vehicle the Model S will have switchable

[1] Renault announces the Fluence ZE switchable EV and an exchange station called "QuickDrop" (http://www.autoevolution.com/news/frankfurt-auto-show-renault-fluence-ze-concept-10949.html)

batteries. In addition a number of private companies[2] have also proposed the battery switch model.

Further, President Barack Obama identified battery switch stations as an essential component of EV refueling infrastructure. In a speech given earlier this year, he voiced his support for the West Coast's "Green Freeway," or "a network of rest stops that allow you to do more than just grab a cup of coffee; but also charge your car, refuel it with hydrogen or biofuels, or **swap out a battery in the time it takes to fill a gas tank**." By expanding its investment plan to align with this vision, the CEC will support a coherent and unified proposal toward a clean transportation future.

It is also important to note that battery switch stations have been a component of EV infrastructure since the EVs of the late 1800s. Even then, these EV pioneers recognized the need for range and that with the appropriate infrastructure, EVs did have the ability to "gas and go." Further, switchable batteries have been used extensively in the industrial sector to power equipment such as electric forklifts. Electric buses with switchable batteries were also successfully used at the 2008 summer Olympics. In each of these examples, passenger vehicle, forklift and bus, the battery switch capability and associated infrastructure enabled significantly more vehicle "up time" in comparison to the typical charging regime of a fixed battery vehicle.

More recently, beginning in May 2009, Better Place, as detailed by the video http://www.betterplace.com/solution/charging/ has been demonstrating a working light duty vehicle battery switch station in Yokohama, Japan. The success of this project has led to a larger one, in late August Better Place received an award from the Japanese government to conduct a pilot project in Tokyo for the world's first electric taxis with switchable batteries. Better Place is partnering with Tokyo's largest taxi operator, Nihon Kotsu, in the project commissioned by the Ministry of Economy, Trade, and Industries Natural Resources and Energy Agency. The pilot is scheduled to be operational in January 2010.

Finally, here in California, a brief by the University of California at Berkeley, Center for Entrepreneurship & Technology released on August 24, 2009, concludes that a battery switch model would significantly accelerate EV mass-market adoption. Under the baseline scenario, the study projects EVs reaching 64% of new light duty vehicle sales in 2030. It uses a model that includes the EV purchase price and operating costs using switchable batteries plus charging networks financed by pay-per-mile contracts. See http://cet.berkeley.edu/dl/EV3Econ_Final.pdf for the full document.

In summary, we recommend that CEC include battery switch stations within the EV infrastructure category. Battery switch stations will provide consumers a powerful incentive by reducing concerns over vehicle range and enabling significantly longer trips. This will in turn dramatically increase both EV adoption and utilization rates while

[2] carbatt.no, urecasystems.com

furthering the CEC's long-term goals of reducing California's greenhouse gas emissions and petroleum dependence.

Should you have any questions, please do not hesitate to contact Sven Thesen at (415) 225-7645 or me.

Cordially,

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