Energy - Docket Optical System

From: Zachary Kahn <zach@waveipt.com>
Sent: Friday, February 20, 2015 9:37 AM
To: Energy - Docket Optical System
Cc: Smith, Charles@Energy
Subject: 14-ALT-01 WAVE Comments

Hi Mr. Smith and team,

I was on the phone for the CEC's advisory Committee meeting and public workshop for the Alternative Renewable Fuel and Vehicle Technology Program at the San Joaquin Valley Air Pollution Control District last week and I wanted to drop you a quick note to submit my comments on the CEC's 2015-2016 Investment Plan. Specifically, I would like to provide comments as to what the CEC can do to help accelerate the adoption of zero emission heavy duty vehicles. I work for a wireless charging technology company called WAVE, that has focused on heavy duty vehicles from the get go. We understood early on that the only way to get widespread adoption of electric vehicles on the heavy duty side, was to provide an answer to the range question. We developed a technology specifically towards the concerns of the heavy duty vehicle operators. Our system is rugged-ized, elegant, cost competitive, and transfers high power over a big air gap. We currently have a commercial 50 kW wireless charging system that has been launched initially on transit buses. Our first project is with the Utah Transit Authority (launched in October) and we will be delivering on 3 additional project in the first half of 2015 (two of which are in California - a trolley in Monterrey, and 2 buses in Lancaster).

In the electric bus space, there have been two major impediments to vehicle electrification - (1) concerns about upfront capital costs and (2) range anxiety. In the last two years, we have seen electric bus pricing come down tremendously - and they are now cost competitive with Hybrid buses in California with ARB's HVIP support. These costs are expected to continue to drop as volumes go up and more competitors enter the market. We think en route charging - conductive or inductive - is the only viable near term solution to the other major issue of range. Operators need to be confident that their electric vehicles can meet their current and future duty cycles. Well-planned en-route charging can enable electric vehicles to meet virtually any heavy duty vehicle duty cycle. WAVE's charging system can work with any electric heavy duty vehicle that is equipped with a WAVE secondary receiver. So a Proterra bus and a BYD bus could utilize the same charging infrastructure seamlessly.

The CEC has been and is planning to continue to be quite supportive of the development/demonstration of medium and heavy duty vehicles and *passenger vehicle* electric charging infrastructure. We believe that support for heavy duty battery electric vehicle charging infrastructure has been overlooked by CEC and we encourage CEC to consider dramatically increasing its support of the charging infrastructure necessary to support heavy duty vehicles. In order to match the easily available infrastructure that currently supports diesel and CNG heavy duty vehicles, California needs significant investment in charging infrastructure specific to battery electric heavy duty vehicles. This would include chargers for transit agencies to support their bus networks, and chargers for Ports and other industrial sites to support the electrification of yard haulers, drayage trucks, and other vehicles.

We would be happy to discuss this in more detail if you are interested in learning more. We are tremendously appreciative of the work your team is doing in the heavy duty vehicle space and are grateful for the opportunity to participate in this discussion.

Thanks,

Zach

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