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November 18, 2013

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 13-ALT-02
1516 Ninth Street
Sacramento, CA 95814-5512

California Energy Commission

DOCKETED
13-ALT-02

TN 72362

NOV. 18 2013

Re: Comments on 2014-2015 Investment Plan Update

Since 2001 California has invested more than \$30 million in the Bay Area's \$88 million fuel cell bus development program (ZEBA – Zero Emission Bay Area), and the return on investment has been considerable:

- First- and second-generation fleets of fuel cell buses have operated more than 800,000 miles, and the fleet of 12 buses in service presently are continuing to accrue between 32,000 to 36,000 miles per month
- More than three million passengers have been transported by the fuel cell bus fleet, and most of these people live in Title VI Environmental Justice neighborhoods. Ridership continues to grow at the rate of 150,000 or more passengers per month.
- The fleet has realized 90% better fuel economy than conventional buses.
- The lead fuel cell now has over 15,200 hours of continuous service without failure.
- Availability and reliability of the fleet is equal to or better than the diesel fleet.
- More than 165,000 kilograms of hydrogen has been dispensed and more than 6,000 fills have been executed.
- Upon the opening of the AC Transit Oakland hydrogen fueling station in 2014, 130 kg of hydrogen per day will be generated with renewable energy from solar and biogas.
- A recent survey of operators conducted by UC Berkeley's Transportation Sustainability Research Center indicates strong driver acceptance (40% rate fuel cell buses better than conventional buses, and 36% rate them on par with conventional buses).
- An FTA-sponsored survey of passengers found an 80% favorable rating.

*The performance data on fuel cell buses compared to conventional diesel buses is documented by NREL evaluation reports. Report No.3 will be released in November 2013.

Fuel Cell buses provide added performance value across a range of operating characteristics necessary to efficiently and effectively operate transit service on heavy-duty urban transit routes.

- They have a range of 220 to 250 miles and only require to be refueled once every 24 hours, so they can pull out early in the morning and easily operate 12 to 19 hours without refueling. This enables the buses to maintain service levels and headways without increasing travel time and operating costs.
- Fuel cell buses are able to operate with sustained power to maintain schedule adherence throughout an 18-hour service day. Peak power ratings are the same with the last molecule of hydrogen as the first.
- Refueling times of six to eight minutes for 25 to 28 kg of hydrogen are comparable to the time to fuel conventional ICE buses
- Full flexibility to accommodate changing land use and ridership patterns and changes in routing.
- Full flexibility to accommodate daily disruptions in deployment of vehicles. Often buses previously scheduled to pull out on specific routes may have mechanical defects that prevent them from being used at the last minute. Fuel Cell buses are adaptable to most, if not all, duty cycles and can be used for last minute deployment on virtually any route, as well as re-routing buses in the case of emergencies and natural disasters.
- The fuel cell performance on heavy-duty transit buses sets the stage for all heavy-duty vehicle applications.

CEC has been very supportive of the CEC program with more than \$4 million in grant funds to build two hydrogen fueling stations at AC Transit. A recent FTA grant in the amount of \$1.8 million has been awarded to CTE to ensure that the ZEBA fleet of fuel cell buses continues to operate without any interruption of service through 2015 and 2016. In order to leverage the success of California's large-scale advanced demonstration program continued funding is critical to maintain the performance momentum.

The California Fuel Cell Partnership (CaFCP) adopted the 2013 California Fuel Cell Electric Bus Roadmap, which has been endorsed by the Governor's 2013 ZEV Action Plan. It calls for establishing two Centers of Excellence – one in Northern California and the other in Southern California. These centers will serve to prove the technology readiness and commercial viability for large-fleet service – both in terms of fueling infrastructure and vehicles. A focused demonstration on two centers will provide the confidence level to transit agencies throughout California, as well as the United States, that fuel cell buses and hydrogen fueling infrastructure are sufficiently reliable to replace conventional fleet operations. At the same time, an expanded production level of 40 to 80 buses as proposed by the Roadmap would increase volume sales and supply chain cost reductions to help launch commercially viable fleets of vehicles.

The Fuel Cell Bus Roadmap proposes to leverage these accomplishments and more than \$54 million in federal and regional matching funds with \$19.4 million from the AB 118 Alternative Fuels Investment Plan over the next several years, in support of establishing the two Centers of Excellence.

CTE encourages the California Energy Commission to maintain its support of fuel cell electric transit buses and to help fund the CaFCP Fuel Cell Electric Bus Roadmap, in order to continue the significant progress being made toward commercialization of fuel cell technology.

Sincerely,



Jaimie R. Levin
Director of West Coast Operations