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5 August 2013

VIA E-MAI. TO: www.arb.ca.gov/cc/scopingplan/2013comments.htm

Chair Nichols and Members
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814
P.O. Box 2815
Sacramento, CA 95812

Re.: 2013 Scoping Plan Update — Heavy Duty Fuel Cell Fleet Vehicles

Chair Nichols and Members Of The Board:

I am an elected at-large member of the Alameda-Contra Costa Transit District Board of Directors and am a member of the Sierra Club's Energy and Climate Change subcommittee. These comments are, however, my own.

In your scoping plan update I urge you to take seriously the potential of heavy duty fuel cell fleet vehicles to dramatically reduce emissions of both criteria pollutants and GHGs in that segment.

As you know, at AC transit we have an extremely successful program operating 12 full-size 40 foot fuel-cell buses in daily revenue service. These are 24,000 pound vehicles that can operate 18 or 20 hours a day and be refueled in 15 min. They produce virtually zero emissions at the bus (a small amount of water vapor only) and dramatically lower emissions “well to wheel.” We produce about 65 kg a day of hydrogen using solar cells (enough to fuel approximately 2 ½ buses) which generates zero GHGs. Even when producing hydrogen in the “dirtiest” fashion – high temperature steam reformation of natural gas – we produce 40% less GHG’s than if we used the natural gas in an internal combustion engine.

Thus far, our fuel cell buses have proven to be quite reliable and dependable. Our longest – lasting fuel-cell has more than 13,000 hours on it and none of them, as of yet, have failed and needed to be rebuilt.

As you know, our numbers have been verified by the Department of Energy's National Renewable Energy laboratory ("NREL") (Links to the NREL reports and other information regarding our program are at: <http://www.actransit.org/environment/the-hyroad/archives-and-links/>

During the joint Transportation and Energy Ministerial Conference held by the Asia-Pacific Economic Cooperation (APEC) in San Francisco in September of 2011 our fuel cell buses were pressed into service to take the ministers and their staffs from the ferry terminal in Alameda to a demonstration at FedEx at the Oakland airport. As part of that exhibition, there was a class 8 fuel cell drayage truck tractor from a small group of such tractors that are being used in the ports of Los Angeles and Long Beach. Although I have not read any reports that were verified by NREL, what I was told by the people at that demonstration was that they, also, had been quite successful.

The issue is high capital costs. All of these vehicles are produced in very small quantities with no benefit of mass production. The cost curve is, however, moving in the right direction. Our first 40 foot buses were approximately \$3.2 million. The buses we have been running for the past four years were about \$2.5 million. I am told that the latest equivalent buses that were delivered in Europe were about €900,000 (about \$1.2 million). Both European and American manufacturers have said that \$900,000-\$1 million per vehicle is possible in quantity 100 (our last "buy" was from a quantity 16 production). I assume, without detailed knowledge, that the cost factors for trucks are in the same ballpark. That is moving in the right direction, but is still substantially more than the equivalent diesel bus.

Obviously, it will be a long time before there is infrastructure for either heavy duty or light duty hydrogen vehicles roaming America's highways. Nevertheless, there are a substantial number of vehicles that operate in fleets that come to a central fueling location regularly (urban buses, delivery trucks, port drayage trucks, etc.). In many cases, particularly with urban buses and delivery trucks and port drayage trucks, those vehicles operate in areas

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where there are high rates of criteria pollutants and thus there is a dual benefit of reduced criteria pollutants along with reduced GHG's. If appropriate funding can be found, those fuel cell fleet vehicles could begin to be used in significant numbers in the 2020 time-frame rather than later.

It would be important for your scoping plan to both mandate the increased use of the fuel-cell technology and to find a funding source for the additional capital expense that they represent.

If I can provide you with any further comments or information, please do not hesitate to contact me.

Very truly yours,

/ S /

H. E. Christian Peeples

Cc AC Transit Board Of Directors
AC Transit General Manager David J. Armijo
California Fuel Cell Partnership
Jaime Levin, Senior Project Manager, Director West Coast Office,
Center for Transportation and the Environment

HECP/win

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