Date:20th Oct 2020

From: Ranji George

Re: ARB's Proposed Truck Regulation

Hello ARB Staff

Thank for considering the Proposed Truck Regulation. It will indeed help us come closer to meet Air Quality goals.

> In the light duty sector, ARB seemed to have abandoned fuel cells. According to San Diego Union article of Feb 3, 2019, the state spent nearly 2.5 billion dollars on ZEV incentives. That does not include the VW settlement of $800 million. Almost all of the above funds went to battery ZEVs and only 230 million of CEC funds went for H2 (namely H2 charging stations). Thus nearly 90 percent of over 3 billion dollars went to battery ZEVs and a small fraction to H2 fuel cells. This lack of funding has crippled the hydrogen fuel cell industry. Many hydrogen fuel cell companies went out of business.

Financial impact on trucking company

The Proposed Rule recognizes the value of hydrogen fuel cell trucks. But it seriously fails to note the extra ordinary cradle to grave benefits of fuel cells For example, the Proposal fails to seriously note the challenges posed by battery Trucks.

Each battery truck needs to carry several tons of battery. This reduces the amount of commercial payload trucks can carry – both in terms of volume and weight. Payload is what keeps trucking companies profitable. Fuel cell trucks have far less impact on payload. Including the hydrogen tanks, the fuel cell powertrain weighs significantly less (than battery powertrains). Fuel cells allow trucking companies to carry more payload - sustaining its operations, and preventing bankruptcies.

Major Environmental hazard in making?

Currently a diesel truck carries 2 standard lead acid batteries weighing 60 pounds. The new Class 6-7 pure battery truck may carry upto 4 tons of batteries (or 8,000 lbs). Thus the battery pack of BZEV is about 130 times bigger. Even assuming a second life in storing electricity, these batteries have to be disposed off later. Disposal will have significant environmental consequences:

- the need to construct several dozens massive recycling facilities,
- substantial increase of waste hauling trucks to and fro to disposal facilities
- from each recycling facility, the potential release of toxic cobalt, nickel, and resins from the cathode to name a few. All these metals, chemicals are highly toxic. Workers, neighbors will be exposed to these chemicals and the solvents needed to retrieve these chemicals.

Custody of the waste batteries

- its not clear how you ensure custody of the spent batteries, a custody needed to ensure safe and clean recycling. In 2013, in a report by Dept of Waste, California, just 2 percent of consumer

batteries actually are recycled, Though these are consumer batteries, it is a template that highlights the complete failure to get custody of the batteries and in turn be sent to recycling factories. These batteries have ended up in landfills, or worse shipped to Mexico and emerging countries.

:Potential Location in AB 617 EJ areas

Besides where will these dozens of new battery recycling centers will be installed? Obviously not in the rich glittery middle and upper middle class areas such as Brentwood, Bel-Air or Malibu. EJ communities – in direct violation of AB 617 – have to face the burden of these recycling centers.

Solution:

ARB should stop underestimating the great benefits of fuel cell technology. Not only it cleans the air, and is a powerful weapon to combat climate change, fuel cells are significantly superior environmentally friendly technology. Using renewable energy, hydrogen is made from simply splitting water. Hydrogen extraction is much cleaner than how lithium, cobalt and rare earth metals are extracted for batteries. Also, relatively speaking, given their standard size, volume and weight, fuel cells have minimal disposal problems relative to giant size batteries.

We urge ARB to explicitly recognize and acknowledge the significant challenges battery technologies have, and the extraordinary environmental and operational superiority of fuel cell technology – more so, in the trucking context.

Sincerely
Ranji George
Coalition for Advanced ZEV

PS: I am an ex-scientist from SCAQMD. In late 80s and early 90s, with support of a key superiors, I had the honor of getting the ball rolling first for electric batteries and then for hydrogen fuel cell technologies. We were the first in the country. Rest of California soon followed. Lately, I am disappointed that ARB in the last 20 years have sharply swung in favor of batteries at the expense of fuel cells.