November 29, 2017

Sam Wade
Chief, Transportation Fuels Branch
California Air Resources Board
Cal/EPA Headquarters Building
1001 "I" Street
Sacramento, California 95814

Dear Mr. Wade –

We are pleased to submit the attached proposal for consideration by the California Air Resources Board (ARB), creating a new "Hydrogen Infrastructure Pathway" to generate credits under the Low Carbon Fuel Standard (LCFS). We are proposing the ARB expand the LCFS credit program to accelerate hydrogen fuel availability by providing LCFS credits based on installed fuel dispensing capacity.

Research has shown that meeting California's goals for greenhouse gas and criteria pollutant emission reductions for 2030 and 2050 require acceleration and scaling up of very low-emission options in the transportation sector. Zero and near-zero emission vehicles with very low-carbon fuels and an increasing rate of adoption are needed to achieve California air quality and emission reduction targets.

Specific to the LCFS, decreasing the average carbon intensity of fuels requires both supply of low-carbon fuels and demand through conditions that enable customers to switch to a low-carbon fuel. The availability and competitive pricing of very low-carbon fuels is needed for consumer adoption, and supporting fueling network coverage and cost reduction are therefore consistent with the LCFS policy intent to reduce the average carbon intensity of transportation fuels in California.

Specific to hydrogen fuel, the initial low utilization of new refueling infrastructure during early stages of the market limits the pace of development and availability of this fuel, and increases the cost relative to traditional transportation fuels, all of which inhibit customer adoption of fuel cell electric vehicles (FCEV) and switching to hydrogen fuel in furtherance of the LCFS policy intent.

Hydrogen refueling station capacity, coverage, and cost are among the factors limiting customer adoption of FCEVs, which are becoming available in larger numbers and range of models.

However, with modest scale in sustained development of hydrogen refueling infrastructure, it has been shown that the cost of hydrogen refueling stations can be reduced by 50% or more. A significant portion of cost reduction in hydrogen refueling stations serving light-duty vehicles can also apply to stations serving heavy-duty vehicles.

With successful demonstration activity enabled by effective grant support for hydrogen fuel, there is now an opportunity to pivot from demonstration toward commercialization, to accelerate and scale up hydrogen refueling infrastructure with increasing renewable content, for progress toward California's

greenhouse gas and criteria pollutant emission reduction goals, to decrease cost toward fuel price parity for Californians, and to harmonize across policy support for zero emission vehicles.

This policy can enable a significant increase in the rate of station buildout, which supports the ability of automakers to deploy FCEVs into the market at higher volumes, as an important step towards commercialization.

We therefore propose for your consideration in this rulemaking the creation of a pathway for generating LCFS credits based on installed hydrogen station fuel dispensing capacity. Very simply, the number of credits generated through this "Hydrogen Infrastructure Pathway" would be equal to the potential for credit generation from the station capacity minus the credits generated through hydrogen fuel sales.

The Hydrogen Infrastructure Pathway accomplishes the following during the initial increase in FCEV sales:

- It partially offsets the initial low utilization of hydrogen refueling stations, thereby supporting refueling network development to increase the availability of this fuel and enable customer adoption
- It enables efficient development of hydrogen refueling stations at a sustained pace and scale to achieve significant cost reduction, for efficient use of public and private funds and for progress in reducing the cost of low-carbon fuels for Californians
- It enables the incentive structure already in place in the LCFS to reduce the carbon intensity of hydrogen through increasing renewable content, by generating credits for the station capacity based on the fuel pathway rather than just the fraction of capacity initially used
- It is self-balancing and sun-setting, with credit generation through the Hydrogen Infrastructure Pathway decreasing over time as hydrogen sales and station utilization increase

The Hydrogen Infrastructure Pathway as proposed addresses the following:

- A potential unintended consequence of gaps in the hydrogen refueling network coverage, especially for connector and destination stations with lower initial utilization, is partially mitigated by the structure of the Hydrogen Infrastructure Pathway generating more credits for under-utilized stations, and may be further addressed with targeted grant funding opportunities.
- Potential manipulation through false/stranded/poor quality/excessive capacity hydrogen refueling infrastructure is addressed through qualification requirements for stations to meet established and industry-recognized performance standards

This pathway would create a durable and scalable mechanism to partially offset low utilization during early commercialization of hydrogen fuel.

Thank you for your consideration.

For further information on this proposal, please contact the company representatives listed below.

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