4752 West California Ave,
Suite B-400
Salt Lake City, UT 84104
+1 (801) 935-8650

January 7, 2022

Matthew Botill
CARB
1001 I Street
Sacramento, CA
95814

Aaron Gillmore
CEO, WAVE

Re: WAVE Comments on December 7, 2021 - Public Workshop: Potential Future Changes to the Low Carbon Fuel Standard (LCFS) Program

Dear Mr. Botill:

WAVE (Wireless Advanced Vehicle Electrification) appreciates the opportunity to comment on the California Air Resources Board's (CARB) December 7, 2021, public workshop on Potential Future Changes to the Low Carbon Fuel Standard (LCFS) program.

WAVE is the leading developer of high-power, wireless inductive charging solutions for medium and heavy-duty electric (MHD) vehicles. Markets for these vehicles are growing rapidly, especially in California due to the State's clear vision, regulatory and incentive programs to transition fleets to zero-emission vehicles (ZEVs), and the LCFS itself.

Heavy-duty vehicles use up to 10 times more power than passenger vehicles, and the technical challenges associated with fast charging scale accordingly. For example, at higher power levels, especially those needed to charge heavy-duty trucks, the weight and heat of larger plug-in cables become unmanageable.

WAVE inductive chargers are embedded in the roadway or depot pavement. High power is automatically delivered to a fleet's MHD vehicles during regularly scheduled stops of any time length. The charging process is quick, hands-free, and safe. Free of overheard charging gear, ground clutter, and heavy cables, wireless charging reduces many of the challenges of deploying MHD charging infrastructure at scale.

The WAVE system has been used by transit agencies across the U.S. since 2016, including the Antelope Valley Transit Authority (AVTA) in Northern Los Angeles County - the largest operating battery-electric bus fleet in the United States.

The LCFS program was key to developing the initial market and ultimately, driving high-power wireless charging to commercial viability. We believe that high-power, hands-free wireless inductive charging will be critical to accelerating the elimination of harmful MHD emissions due to operational efficiencies. As such, WAVE supports maintaining a robust LCFS program and strengthening it through 2030 and beyond to align with the State's greenhouse gas reduction goals.

We recognize CARB is considering a proposal for expanding capacity crediting to the heavy-duty sector, and we have some concerns we would like to raise. First, we oppose a policy framework that would distort the LCFS credit market value by only providing capacity credits to hydrogen refueling. Second, we are concerned that capacity-based credits would weaken the important market signal provided by the LCFS for low carbon fuel projects and associated emissions outcomes by flooding the market with credits not associated with direct emissions reductions. Actual utilization, whether kWhs or cubic feet of hydrogen consumed, should drive the market value of a low carbon credit, not capacity which may never be utilized.

Fleet operators or infrastructure providers should not have an incentive to oversize infrastructure simply to capture additional LCFS credits. In fact, the opposite is better policy – they should be rewarded for quickly transitioning to ZEVs and maximally utilizing available infrastructure throughput as soon as possible. Unlike the light-duty sector, where capacity credits support larger, publicly available charging stations and hydrogen refueling stations and therefore, the ongoing growth of the ZEV market, for MHD vehicles, infrastructure may not be publicly available and will often serve defined fleets.

Accordingly, if CARB chooses to adapt the capacity crediting mechanism used for light-duty ZEVs to the heavy-duty sector, we encourage you to:

- Include electricity, as well as hydrogen, to avoid distorting the market for ZEVs and ZEV fuels.
- Reward and encourage high utilization of heavy-duty ZEV infrastructure to avoid windfall revenues to hydrogen station developers or electric vehicle charging providers at the expense of the LCFS program and market on the whole.
    - At a minimum, capacity credits in the heavy-duty sector should be limited based on the size of the fleet they'll serve to avoid unnecessarily oversizing infrastructure.
- Include a reward/multiplier for utilization, similar to how CARB encourages efficient energy conversion in biogas-to-electricity pathways, so as to not reward delaying heavy-duty fleet conversions to ZEVs.
- Strengthen the program accordingly, so as to not dilute the credit market and to ensure that the LCFS is fully delivering its expected emission reductions, above and beyond whatever strengthening may be considered to align with California's climate goals and the Scoping Plan.
    - For example, if CARB were to develop capacity crediting for MHD vehicles and cap capacity credits at 2.5 percent of deficits, we encourage you to strengthen the program by an additional 2.5 percent to ensure the same emissions reductions and market value of a low carbon credit as would occur without the capacity crediting mechanism.
    - Regardless, as CARB considers strengthening carbon intensity reduction requirements through 2030 and beyond, we encourage a reduction of an additional 2.5 percent – above and beyond whatever might be considered to align with the Scoping Plan and to be made effective immediately upon implementation of the LCFS amendments – in order to account for capacity credits already allotted to light-duty ZEVs and ensure the LCFS delivers its expected emissions reductions in the near-term.

Thank you for the opportunity to comment. Please let us know if you have any questions regarding these thoughts.

Sincerely,

Aaron Gillmore
CEO, WAVE