January 6, 2022

Mr. Richard Corey
California Air Resources Board
1001 I ST
Sacramento, CA 95814

Subject: Public Comment – Potential Future Changes to the LCFS Program

Dear Mr. Corey:

Significant investments are flowing into renewable diesel (RD) projects which are underpinned, in part, by the LCFS due to: (1) RD's comparatively low carbon intensity values; (2) the fact that RD is considered by CARB as a drop-in replacement for conventional diesel; and (3) CARB's claim that RD reduces NOx emissions from all types of heavy-duty diesel vehicles. As you know, CARB's claims regarding NOx reductions from RD are contradicted for new technology diesel engines (NTDEs) by CARB's recently published report entitled "Low Emission Diesel (LED) Study: Biodiesel and Renewable Diesel Emissions in Legacy [pre-2010] and New Technology Diesel Engines [post-2010]"[1] (hereinafter referred to as the "**LED Study**"). More specifically, CARB's LED Study shows:

- Staff have significantly overestimated the NOx emissions reductions from renewable diesel (RD) alone and in combination, at any level (including B5), with biodiesel and can no longer be claimed as on offset factor.

- RD, at best, provides NOx equivalent emissions to CARB Diesel in NTDEs which now represent over 75% of the California on-road fleet.

- To a much lesser extent, while RD reduces NOx in off-road legacy engines those engines are only a small percentage of the California on-road fleet (<25%).

The LED Study findings are beyond reproach given the All-Star Team that worked with CARB to generate the emissions data which included: the National Biodiesel Board, the Center for Environmental Research & Technology, University of California, Riverside, the Engine Manufacturers Association, and the Renewable Energy Group. Given RD's marginal emissions performance in NTDEs, CARB must define the potential regulatory actions it will be considering in the wake of the LED Study findings to improve air quality and to provide stakeholders with full transparency.

[1] https://ww2.arb.ca.gov/resources/documents/low-emission-diesel-led-study-biodiesel-and-renewable-diesel-emissions-legacy

Given that achieving substantial reductions in NOx emissions from heavy-duty diesel engines is one of CARB's primary strategies for bringing the South Coast and San Joaquin Valley Air Basins into compliance with the National Ambient Air Quality Standards for Ozone and $PM_{2.5}$, the results of the LED Study have critical implications with respect to the Mobile Source State Implementation Plan Strategy. CARB needs to act now to address the shortfall in NOx emissions reductions that is now clear from the LED study.

The LED Study has far reaching impacts on California's 2016 and 2022 State Implementation Plans (SIP), some of which are outlined following:

1. The 2022 SIP plan must account for Staff's technically unsupported promotion of RD as a NOx offset factor. As an example, CARB's 2022 SIP Presentation[2] (October 2021) discusses at slide 46 "In-Use Off-Road Diesel-Fueled Fleets Regulation Amendments", and lists "Renewable Diesel Requirement" as a possible measure to reduce emissions. Based on the LED Study, RD use in off-road and on-road NTDEs will not achieve any NOx emission reductions.

2. The Los Angeles/South Coast Air Basin along with the San Joaquin Valley, which are extreme non-attainment areas exceeding the 70 ppb 8-hour Ozone Standard, should be extremely concerned with the LED Study findings. The 2016 South Coast Air Quality Management District SIP Study[3] states "that in each annual demonstration report for Calendar Years 2018 through 2031 submitted to U.S. EPA by April 1 of the following year, the SCAQMD Governing Board commits to …. (3) determine whether the identified projects are projected to achieve the full amount of NOx emission reductions identified", page 16. The SCAQMD must acknowledge that any CARB measure to reduce NOx emissions using RD can no longer be claimed based on the LED Study findings.

3. The 2016 Mobile Source Strategy[4] "Estimated Emissions Reductions" (page 154), relies on legacy engine emissions reduction wherein "… NOx … would be reduced by 9 percent to 18 percent …". Even though the LED Study found that RD use in off-road legacy engines reduces NOx by 5.2% (average for the two cycles), well below the claimed range, Staff must move away from using legacy engine emissions data and place more emphasis on the NTDE type emissions data in the LED Study and Karavalakis Study[5]. The LED Study finding that, in NTDEs, RD provides no incremental NOx reduction as compared to conventional diesel fuel will result in CARB having to restate its previous and significant RD related NOx emission's accounting errors when updating its 2022 SIP

[2] https://ww2.arb.ca.gov/sites/default/files/2021-10/2022_SSS_October_Workshop_Presentation.pdf
[3] http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf
[4] https://ww3.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf
[5] "Emissions and Fuel Economy Evaluation from Two Current Technology Heavy Duty Trucks Operated on HVO and FAME Blends," SAE Int. J. Fuels Lubr. 9(1):2016, https://doi.org/10.4271/2016-01-0876.

plan and find real NOx emission reductions to offset those previously claimed for from the use of RD. In addition, CARB Staff needs to appropriately revise and reconsider the multi-media evaluation of RD which was required to be performed prior to the approval of the fuel for sale in California.[6]

CARB staff have wrongly concluded that RD reduces NOx emissions. Accordingly, CARB Staff should immediately reverse some of the regulatory changes it made when implementing the Modified Alternate Diesel Fuel (ADF) regulation in May 2021. CARB suppressed LED Study emissions data during the ADF rulemaking process, revoking our VESTA® Executive Orders which have been proven to reduce NOx emissions – not only in CARB's testing but as evidenced by the granting of patent 11,1687,789 – while approving ADF Formulations which Staff knew did not reduce NOx emissions. CARBs rule making process was entirely disingenuous, and remedial action to address its breach of the public's trust must be taken without delay.

CARB has mishandled the regulation of RD. CARB initially relied on a 2011 CE-CERT study which was conducted using legacy engines to justify RD's use throughout the fleet. On July 13, 2013 CARB issued a Joint Statement entitled "Renewable Diesel Should Be Treated the Same as Conventional Diesel"[7]. CARB threw caution to the wind and opened to door to RD's unlimited use without having properly studied NOx emissions impact in NTDEs. It's taken CARB eight (8) years to complete the LED Study, which is a forward-looking emissions test program, that demonstrates CARB's assumptions regarding RD were erroneous. CARB staff needs to acknowledge this and take immediate steps to ensure that NOx emissions are not actually increased by the use of RD.

Thank you for allowing us to submit our comments and we remain hopeful that CARB will act in the best interest of its citizens.

Respectfully,

Patrick J McDuff

Patrick J McDuff
CEO
California Fueling, LLC

[6] https://ww2.arb.ca.gov/sites/default/files/2018-08/Renewable_Diesel_Multimedia_Evaluation_5-21-15.pdf
[7] https://ww2.arb.ca.gov/sites/default/files/2018-08/Renewable_Diesel_Joint_Statement_7-31-13.pdf