

January 17, 2020

Mr. Lex Mitchell  
California Air Resources Board  
1001 I ST  
Sacramento, CA 95814

**Subject: Comment Submittal – ADF Public Formulation & DTBP**

Dear Lex:

Thank you for the opportunity to comment on the information communicated by CARB through the subject document. In this submission, we wish to address:

- (A) CARB's efforts to "[p]rovide an additional approved B20 ADF formulation for public use" for "[b]lends consisting solely of renewable hydrocarbon diesel at not less than 75 percent by volume, biodiesel, and CARB diesel, where the total biodiesel content of the blend does not exceed 20 percent by volume"; and
- (B) CARB's reemphasis of its prior DTBP approval.

**Item A. – B20 ADF Public Formulation**

Dating back to August 2018, California Fueling has requested protocol approval of an ADF formulation (RHD and biodiesel based) testing plan. CARB rejected all such requests, indicating at various times that "ADF certification for renewable diesel is only available for producers of renewable diesel", and that California Fueling is not a "producer". While CARB declined our proposal pathway, they are apparently not just reversing course by allowing anyone access to the proposed ADF Public Formulation but are technically justifying their decision based on data which does not meet the ADF's requirements, current or future. CARB are obviously doing so to create a new pathway while potentially terminating another (NOx Mitigants).

Furthermore, in our discussions with CARB, representatives indicated that,

"[r]enewable diesel is used as an offsetting factor in the ADF regulation to offset the NOx emissions of B5. To ensure that renewable diesel used as part of a certification is consistent with the offsetting factor provision we require the RD to be associated with a specific RD producer."

**Question 1.: On what basis is CARB now justifying approval of an ADF Formulation that is not connected to a specific producer's RHD, and why is CARB not following the established ADF certification process?**

**Question 2.: Has CARB's stated position on RHD's offsetting factors being applied to specific RD producers changed and if so on what basis?**

**Question 3: What work has CARB done to look at the varying composition of RHD, from source to source, and the associated impact of composition on emissions?**

At CARB's 12/13/19 workshop, we asked how the proposed ADF formulation was technically justified and we were referred to CARB's 2015 RHD multimedia assessment (MMA). In reviewing that document, we've identified an incongruity which we believe CARB must address before advancing the ADF formulation, never mind approving it.

Page 2 of the MMA indicates,

**"As specified in HSC 43830.8, a multimedia evaluation must be based on the best available scientific data, written comments, and any information collected by the Board in preparation for the proposed rulemaking."**

Since the MMA was issued in May 2015, additional literature has been published contesting RHD's ability to reduce NOx in New Technology Diesel Engines (NTDE's). A 2016 study by Karavalakis et al.<sup>1</sup> using two NTDE's, a 2014 Cummins ISX15 400ST and a 2010 Cummins ISB6.7 220, both equipped with an oxidation catalyst, DPF and SCR, evaluated RHD (0, 20, 50 and 100%) blended with a CARB Diesel (19.9 vol% aromatics, no detected polycyclics and a 50.3 cetane number). The study found that increasing RHD levels increased ISX NOx in the UDDS cycle but decreased NOx in the HHDDT cycle. On the other hand, the ISB showed the reverse, increasing RHD levels decreased NOx in the UDDS cycle and increased NOx in the HHDDT cycle. CARB should now consider this robust body of evidence, which appears to be the most applicable technical document in the context of the ADF, RHD, NTDEs and the associated emissions. CARB's previous RHD conclusions are in conflict with the Karavalakis data, the pedigree of which qualifies as "the best available scientific data". At a minimum, CARB should stop from enabling an ADF Public Formulation which is certain to damage the environment until further testing is completed.

While CARB's 2011 Study, referenced in the 2015 RHD multimedia assessment demonstrated RHD's NOx emission improvements, such testing was done under less stringent, pre-ADF engine

<sup>1</sup> "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>.

testing requirements, using a reference fuel that had 18.7 vol% aromatics, 1.5 wt% polycyclics and a cetane number of 55.8. These reference fuel properties, while meeting the requirements of the Designated Equivalent Limits Diesel, do not meet the ADF's specified reference fuel requirements. Under these fuel conditions, NOx was reduced with RHD which should not come as a surprise given the favorable fuel physical properties relative to emissions testing. CARB's 2011 RHD emissions' testing was not conducted pursuant to the required ADF standards and testing protocols. Additionally, the RHD CARB used for testing was from a sole source.

**Question 3.: Will CARB now be considering the Karavalikis<sup>1</sup> study and how will such findings be impacting CARB's view in the context of the proposed ADF Formulation for public use?**

**Question 4.: Will CARB be conducting more rigorous ADF type testing on any newly proposed ADF formulation such that it meets current and/or proposed ADF testing requirements? If not, CARB is clearly demonstrating bias and should provide an explanation as to why?**

**Question 5: Like with biodiesels, will CARB be investigating RHD's compositional differences and their impact on emissions prior to implementing an ADF Public Formulation?**

Separately, there does not appear to have been any market-impact analysis from the allowance of an ADF Public Formulation. As CARB is aware, there are a limited number of parties that are "producers" of both RHD, the availability of which is often a contractually managed process, and biodiesel. Between the overly burdensome financial impact of the changes to the ADF's NOx mitigant testing requirements that will likely foreclose that pathway, and the cost and handling factors that render the DTBP pathway financially impractical, CARB is on the one hand handicapping NOx mitigants while enabling an ADF Public Formulation. CARB is again attempting to "pick winners".

**Question 5.: Has CARB spoken with RHD "producers" about availability constraints and their distribution processes including 3<sup>rd</sup> party agreements, exclusivities (territory based or otherwise), etc.?**

**Question 6.: How will CARB be ensuring that market advantage won't be had by some to the detriment of others?**

**Question 7.: Has CARB made any market-impact analysis, and if so, how does CARB believe that what they are proposing will favorably impact wholesale and consumer diesel pricing or for that matter the LCFS credit market under the proposed scenario?**

**Item B. – CARB’s Emphasis of DTBP’s Approval**

Following on from our last public submission (submitted on 1/10/20) particular to Appendix B of the 1/7/20 ISOR, CARB states “emissions testing has also shown that the NOx-emission increase associated with a B20 blend can be mitigated with the use of ditertiary butyl peroxide (DTBP), an additive, at a dosage of 1.0 percent. Appendix 1 of California’s Alternative Diesel Fuels (ADF) regulation (13 CCR 2293, et seq.) allows the use of DTBP as a NOx mitigation additive in biodiesel blends of up to 20 percent.” However, these two statements are misleading. As you are aware, CARB’s emission testing of DTBP is not ADF compliant, using neither an ADF-based reference fuel nor any of the approved test sequences (Alternatives 1-3). In fact, there is very limited DTBP emissions data, nowhere near what the ADF requires.

**Question 8.: What is the basis for CARB’s apparent continued position that DTBP is an acceptable NOx mitigation additive?**

**Question 9.: How can CARB possibly justify upholding DTBP’s approval and proposing an ADF Public Formulation, neither one of which meets the ADF’S current requirements never mind the futures while potentially striking down other existing NOx Mitigant approvals that meet all the ADF’s requirements when neither DTBP nor the proposed ADF Public Formulation have the associated data to support ADF certification?**

Please let us know if you require further elaboration on any of the above noted matters.

Respectfully,



Patrick J. McDuff  
CEO

California Fueling, LLC