

**STATE OF CALIFORNIA
AIR RESOURCES BOARD**

**Proposed Regulation on the)
Commercialization of New Alternative)
Diesel Fuels)
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Agenda Item: 15-2-3

**Board Hearing:
February 19, 2015**

**COMMENTS OF THE
TRUCK AND ENGINE MANUFACTURERS ASSOCIATION**

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On January 2, 2015, the California Air Resources Board (“ARB”) published a “Notice of Public Hearing to Consider the Proposed Regulation on the Commercialization of New Alternative Diesel Fuels” [CCR, Title 13, Chapter 5, Article 3, Sub article 2, Sections 2290, 2291, and 2293] (the “Proposal”).

The Truck and Engine Manufacturers Association (“EMA”) is the international trade association that represents the interests of the world’s leading manufacturers of compression ignition engines used in both on-highway and nonroad products that will utilize the fuels covered by the Proposal.

I. Background

EMA has actively participated in the testing program and regulatory development process that has led to the Proposal concerning the use of biodiesel blends, renewable diesel fuels, and gas-to-liquid (GTL) fuels.

At the outset of the rulemaking process, and throughout the testing program, EMA and its members emphasized to ARB the importance of ensuring that any alternative fuel regulations recognize the fundamental importance of fuels to the performance, durability, and exhaust emission levels of both new and existing products. In short, fuels cannot exist independent of the engines that use them any more than engines can exist without the fuels required to power them.

The ARB test program designed to evaluate biodiesel blendstocks from various feedstocks, renewable diesel fuels, and GTL fuels is by far the most comprehensive study of the effects of fuel properties on exhaust emissions ever conducted. Even so, the test program evaluated only a small sub-set of alternative diesel fuels on a relatively small segment of the broad population of engines, vehicles/equipment, and emission control systems that make up the diverse inventory in California.

While the Proposal includes several features important to evaluating whether an alternative fuel is appropriate for use in the marketplace, it also raises a significant number of concerns. Our observations follow.

II. Impact of the Proposal

Although the Proposal would not directly regulate the activities of engine manufacturers, several aspects of its implementation will require engine manufacturer participation. For example, for a new alternative fuel to move from Stage 2 to either Stage 3A or 3B, the fuel supplier must “obtain approval of at least 75% of compression ignition engine original equipment manufacturers for which the ADF is expected or intended to be used.” That implies that engine manufacturers must have had sufficient opportunity to evaluate the proposed new fuel, or fuel blending component, to assess acceptability in both new and existing engines in the California marketplace. The Proposal does not set forth a process for determining how to meet the 75% threshold or whether it has been met. Engine manufacturers are in favor of having the regulation call for their acceptance of new fuels, but are concerned that there will be little or no enforcement without an ARB approval process. Therefore, EMA recommends that the Proposal be revised to require written acceptance of a new alternative diesel fuel meeting the required consensus standard by engine manufacturers representing 75% by number and 75% by engines in service for those manufacturers certifying engines with ARB for sale in California.

Even if the Proposal were revised to clarify the level of engine manufacturer acceptance required, EMA still has significant concerns regarding misfueling by the 25% of manufacturers and/or engines that have not accepted the use of the alternative fuel. In addition, engine manufacturers are concerned that the use of alternative fuels will impact engines’ ability to demonstrate compliance with in-use emission requirements and on-board diagnostic requirements given the potential disparity in fuel properties between alternative fuels and California petroleum diesel fuel. The lack of any long-term emission influence evaluation of alternative fuels, either during the rulemaking development or as a requirement of the Proposal, raises significant concerns.

Given the 5-year maximum total timeframe outlined for Stage 2, it is not reasonable to assume that engine manufacturers will have sufficient time to complete the evaluations necessary after they have determined that a new fuel is viable. Similarly, it is not realistic for a new fuel to “achieve adoption of all consensus standards applicable to the ADF” within the prescribed timeframe. A review of the timeline associated with development of the ASTM D6751 standard for biodiesel and its inclusion at up to the B5 level in D975 would be beneficial as a guideline for the time necessary to complete the required consensus standards and engine manufacturer approvals. It also may be instructive to note that ARB’s October 2011 report on biodiesel, renewable diesel, and GTL fuels was five years in the making. Both of those examples demonstrate that the requirements for completion of Stage 2 will require more time than currently proposed. Engine manufacturers also are concerned that the Stage 2 requirement to develop a “consensus standard” for the alternative fuel may be misconstrued to mean a narrow consensus among fuel providers rather than the necessary broader consensus among engine manufacturers, users, and regulators in addition to fuel providers. As a result EMA recommends that Stage 2 be expanded to a maximum of 10 years.

In declaring that B6-B20 blends are at Stage 3A, ARB apparently deems conventional biodiesel methyl ester meeting D6751 and blended at B6-B20 levels as having met Stage 2 requirements. While a number of engine manufacturers have approved B20 for use in some of their engines, it is not clear that the 75% approval threshold, however defined, has been achieved. As noted above, there are substantial questions concerning how ARB intended the 75% approval threshold to be achieved. The apparent ARB approval of B20 blends raises significant questions concerning both how this determination was made, and what regulatory action ARB intends to

undertake to prevent misfueling using B20 blends in engines that have not been accepted for B20 use by the engine manufacturer.

In addition, it appears that ARB has determined that conventional biodiesel methyl esters meeting D6751 can be blended at levels greater than B20 without meeting the following Stage 2 requirements: (i) achieve adoption of a consensus standard applicable to the ADF; (ii) obtain approval of at least 75% of compression-ignition-engine original equipment manufacturers; (iii) identify appropriate fuel specifications for the ADF; and (iv) identify appropriate mitigation strategies for the ADF, none of which have been achieved. Additionally, the apparent approval of biodiesel blends greater than B20 conflicts with ARB's stated purpose in the Proposal to "foster the introduction and use of innovative ADFs in California that have no significant adverse impacts overall on public health or the environment relative to conventional, petroleum-based CARB diesel." ARB's own testing program demonstrated a significant increase in NOx emissions from compression-ignition engines utilizing biodiesel blends greater than B20. Additionally, ARB's NOx mitigation test program (utilized to identify options for NOx mitigation for biodiesel blends less than B20) did not identify any means to mitigate NOx emissions from blends greater than B20. ARB's flawed assumption seems particularly illogical given that ARB is implementing a voluntary low-NOx emission program for heavy-duty engines concurrent with this rulemaking which requires significant NOx reductions from those evaluated in the biodiesel/renewable diesel test program related to the ADF rulemaking.

ARB also has deemed all non-ester renewable diesel fuels, gas-to-liquid fuels, and Fisher-Tropsch fuels as "Diesel Substitute" by definition — meaning that those fuels can be utilized without further study by ARB, engine manufacturers, or California consumers. Without definition of the fuels and/or their fuel properties, engine manufacturers have significant concerns associated with untested fuels being placed in the California marketplace. ARB does propose a definition for "non-ester renewable diesel", but the proposed definition is inadequate because it does not define the fuels evaluated by ARB to determine acceptance. ARB also proposes properties for what is termed "Reference CARB Diesel" in Appendix A Table A.9, but has not proposed any requirement that the prescribed properties be utilized to define the minimum requirements for the non-ester renewable diesel fuels, gas-to-liquid fuels, and Fisher-Tropsch fuels deemed diesel substitute fuels. Recent experience has demonstrated that this loophole may be utilized to allow marketing of sub-standard products. In addition, engine manufacturers do not have sufficient experience with fuels meeting ARB's Diesel Substitute fuel definition to accept their use without constraint. While market factors may be expected to preclude significant use of those fuels neat, or at very high (greater than 75%) blend levels, neither ARB nor engine manufacturers have conducted any testing to demonstrate that such fuels could be used without significant engine performance or regulatory compliance concerns. Engine manufacturers recommend that the definition of "Diesel Substitute" be revised to clarify that: "Diesel Substitute" includes, but is not limited to, blends of no more than 75% non-ester renewable diesel, gas-to-liquid fuels, Fischer-Tropsch fuels; ..." and that the definition of non-ester renewable diesel be revised to "Non-ester Hydrocarbon Renewable Diesel".

ARB has proposed the use of a minimum of 0.75 percent Di-tert-butyl peroxide (DTBP) in biodiesel blends of B10 to B15 and the use of a minimum of 1.0 percent Di-tert-butyl peroxide (DTBP) in biodiesel blends of B15 to B20 when the biodiesel utilized is "low saturation," as one option for an acceptable biodiesel NOx mitigation measure (reference Appendix 1(a)(1)(A)). Engine manufacturers have significant concerns associated with this option for NOx mitigation. Specifically, peroxides such as DTBP are known to reduce oxidation stability of fuels. Neither

ARB nor the fuels industry has demonstrated that the proposed final B10 –B15 and/or B15 - B20 blends would comply with the ASTM D7467 requirement for oxidation stability, or that use of sufficient anti-oxidant additive to meet the D7467 requirements would result in a final fuel that either mitigates NOx emission increases or is viable for engines in the marketplace. Moreover, the fuel industry has advised that it would not recommend the use of these options to mitigate NOx emissions from biodiesel blends. ARB’s inclusion of such options effectively proclaims it a viable fuel option without the testing and approvals required to pass from Stage 2 to Stage 3 for other ADFs in the future.

III. Recommendations

ARB should make several changes to the Proposal prior to its adoption as a Final Rule.

Specifically, EMA recommends that ARB:

1. Prescribe that the Stage 2 time period be a minimum of 2 years, with the opportunity to renew every 2 years for a total of 10 years.
2. Establish, in writing, a process that ARB will utilize to determine that 75% of engine manufacturers have accepted a Stage 2 fuel.
3. Define the term “consensus standard” in the Final Rule to clarify that at a minimum, consensus standards required by the regulation are developed by fuel producers, fuel marketers, engine manufacturers, and users.
4. Direct the California Division of Weights and Measures to develop and implement regulations that mitigate the potential for misfueling as part of the transition from Stage 2 to Stage 3A or 3B, including, among other things, regulations associated with the use of B6-B20 blends deemed by ARB to be in Stage 3A that have not been accepted for use in all engines in California.
5. Clarify that all biodiesel blends greater than B20 are Stage 1 fuels that must meet all of the Stage 1 and Stage 2 program requirements prior to determination if Stage 3A or 3B is appropriate for those fuels.
6. Revise the definition of “Diesel Substitute” to prevent blends of greater than 75% non-ester renewable diesel, gas-to-liquid fuels, Fischer-Tropsch fuels from being used prior to acceptance by engine manufacturers.
7. Revise the definition of “Non-ester Renewable Diesel” to “Non-ester Hydrocarbon Renewable Diesel.”
8. Delete the option to utilize a 0.75% percent DTBP additive treatment in B10-B15 biodiesel blends and the option to utilize 1.0 percent DTBP additive treatment in B15 - B20 biodiesel blends utilizing low saturation biodiesel NOx mitigation measure.

If you have any questions about EMA’s comments, or would like to discuss this matter further, please do not hesitate to contact us.

Respectfully submitted,

Truck and Engine Manufacturers Association