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April 22, 2020

Clerk of the Board  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

RE: NBB Opposition to Proposed Amendments for the Alternative Diesel Fuels Regulation

Dear Chairman Nichols and Members of the Board:

Thank you for the opportunity to comment on the proposed amendments to the Alternative Diesel Fuels (ADF) regulation. The National Biodiesel Board (NBB) is the national association for the U.S. biodiesel and renewable diesel industries; our members produce over 90 percent of the nation's biodiesel and renewable diesel. We have strongly supported the Board's development and implementation of the Low Carbon Fuel Standard (LCFS) since its inception and have enjoyed a very positive working relationship with CARB staff. In the nine years that LCFS has been in place, NBB has never submitted a letter in opposition to a Board rulemaking. However, we regretfully must oppose the proposed ADF amendments you are considering because they are flawed, not based on sound scientific principles and best practices, economically harmful to biodiesel producers and consumers, and run counter to furthering the Board's objectives. This would be true under normal circumstances but is especially applicable under current conditions with the COVID-19 pandemic.

We continue to appreciate the leadership the California Air Resources Board (CARB) has shown in implementing the groundbreaking LCFS. Since biodiesel and renewable diesel<sup>1</sup> play a critical role in the success of the LCFS, it is imperative that the ADF regulation be enhanced without adversely affecting the sale and use of biodiesel and renewable diesel in California. We have discussed the issues below with CARB staff and provide these comments and suggestions for the Board's consideration in the spirit of improving the proposed amendments and current regulation while maintaining a robust and sustainable market for these important petroleum diesel substitutes.

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<sup>1</sup> Biodiesel and renewable diesel are made from the same organic feedstocks but through different processes. Biodiesel is produced through a catalyzed reaction with alcohol in a process called transesterification, while renewable diesel is produced through more energy-intensive hydrotreating of the feedstock in what is essentially the same process used to make conventional petroleum diesel.

## Biodiesel and Renewable Diesel Are the Key Fuels Critical to California, Providing Nearly Half of All LCFS Greenhouse Gas Reductions.

Biodiesel (BD) and renewable diesel (RD) (collectively "biomass-based diesel" or BMBD) continue to perform well under the LCFS, notwithstanding the strict regulatory requirements and challenges that biodiesel has faced since the program began in 2011. Biomass-based diesel volumes have increased from a mere 14 million gallons in 2011 to over 800 million gallons in 2019<sup>2</sup> and are expected to reach 1 billion gallons by the end of 2020. These high-performing diesel replacements have transitioned from modest credit generators to mainstays of the program, accounting for over 46 percent of LCFS credits in 2018. As such, biomass-based diesel fuels have provided the lion's share of the LCFS credits to date (cumulatively 41% of all credits generated since 2011) and have therefore been a key contributor to the LCFS' success. Biomass-based diesel fuels have displaced so much petroleum diesel in eight years that biodiesel and renewable diesel now comprise about 20% of each gallon of diesel fuel used in California.

The credits generated by biomass-based diesel fuels have, to a large degree, enabled the LCFS to overcome the challenges in meeting the gasoline compliance standards due to the fact that cellulosic ethanol production never materialized as expected. And given the expected gradual penetration of electrified vehicles in the medium- and heavy-duty sectors, the LCFS will continue to rely on biomass-based diesel fuels for many years to provide the high energy-density fuels that freight transportation and other heavy-duty engine applications require.

Indeed, the University of California, Davis, Institute of Transportation Studies (ITS) recently published a study that recognizes the critical role biomass-based diesel has played and will continue to play in achieving the Board's 2030 climate and LCFS objectives. The study's modeling showed BMBD playing the key role, more than any other fuel, in reaching the LCFS target of 20% carbon intensity reduction by 2030. In nearly all the scenarios that ITS modeled, up to 60-80% of the diesel pool would need to be biodiesel and renewable diesel in order for the Board to achieve its own 20% CI reduction target by 2030.<sup>3</sup>

## Biodiesel and Renewable Diesel Provide Public Health and Environmental Benefits that Are Available Immediately, Not 20 or 30 Years from Now.

Biomass-based diesel provides significant environmental and public health benefits that accrue immediately upon use. Relative to petroleum diesel, biomass-based diesel fuels reduce greenhouse

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<sup>2</sup> Comments by Jim Duffy, California Advanced Biofuels Alliance conference, February 2020.

<sup>3</sup> Bushnell, James et al., "Uncertainty, Innovation, and Infrastructure Credits: Outlook for the Low Carbon Fuel Standard Through 2030," Feb. 2020, Executive Summary at v, [https://arefiles.ucdavis.edu/uploads/filer\\_public/f7/2a/f72a8b2d-856c-4881-9226-a854b4de6a14/bushnell\\_mazzone\\_smith\\_witcover.pdf](https://arefiles.ucdavis.edu/uploads/filer_public/f7/2a/f72a8b2d-856c-4881-9226-a854b4de6a14/bushnell_mazzone_smith_witcover.pdf), accessed March 27, 2020.

gas emissions (GHG) upwards of 71 percent, diesel particulate matter<sup>4</sup> (diesel PM) by 25 percent or more depending on blend levels, and carbon monoxide, polycyclic aromatic hydrocarbons (PAH), and other noxious compounds by a substantial degree. Also, each gallon of biomass-based diesel consumed helps keep multiple gallons of petroleum crude oil in the ground<sup>5</sup>, which helps to advance the Governor's objectives for reducing California's dependence on fossil fuel by 50 percent by 2030 and achieving carbon neutrality by 2045. By contrast, widespread electrification of the medium- and heavy-duty fleet in California beyond single digits is not expected to happen until after 2040<sup>6</sup>. Therefore, biomass-based diesel fuels can provide immediate public health benefits and meet important policy objectives during the intervening years while electrification ramps up in the state. These sustainable diesel replacements can provide benefits to all Californians, but particularly for those vulnerable populations in disadvantaged communities near heavy freight activities and facilities.

#### COVID-19 Has Significantly Impacted BMBD Producers, Particularly Those Heavily-Reliant on Used Cooking Oil and Other Waste Oils.

Apart from the massive damage the COVID-19 pandemic has wrought on virtually all economic sectors in the U.S., it is expected to have a particularly acute impact on biomass-based diesel producers in California and elsewhere. Before the pandemic, the biomass-based diesel industry in California supported 4,400 high paying jobs, \$156 million in annual wages, and \$150 million in economic activity, often to the benefit of disadvantaged communities served by a number of California producers. While comprehensive economic data are still being gathered, the shelter-in-place orders across California and in many states have drastically reduced or eliminated the supply of used cooking oil (UCO) and other waste oils from restaurants and other feedstock sources. This is having a major impact on BMBD producers, especially in California, which have structured their production, business model, and supply chains around the availability of UCO and other waste oils because the resulting BMBD fuels have among the lowest carbon intensities of any fuel under the LCFS program. As a result, California producers are experiencing significant economic harm ranging from 40-60% or more in lost production and related losses in income, LCFS credit generation, and employment.

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<sup>4</sup> CARB identified diesel PM as a toxic air contaminant in 1998, "with no safe threshold of exposure, which means that any diesel PM exposure may increase lifetime cancer risk for affected communities." Proposed Regulation on the Commercialization of Alternative Diesel Fuels, Staff Report: Initial Statement of Reasons, p. 50, <https://ww3.arb.ca.gov/regact/2015/adf2015/adf15isor.pdf>, accessed Feb. 10, 2020.

<sup>5</sup> As a general rule, each barrel (42 gallons) of petroleum crude oil yields about 19-20 gallons of gasoline, about 11-12 gallons of diesel, and about 4 gallons of other products. See <https://www.eia.gov/tools/faqs/faq.php?id=327&t=9>, last accessed Feb. 20, 2020.

<sup>6</sup> CARB staff's own projections for electrification in the heavy-duty vehicle (HDV) sector suggests fleet penetration of electrified HDVs would not grow beyond single digits until sometime after 2040. See Appendix F, Figs. 1-5, "Staff Report: Initial Statement of Reasons," released October 22, 2019, <https://ww3.arb.ca.gov/regact/2019/act2019/appf.pdf>, pp. 7-9, accessed Feb. 20, 2020.

CARB Should Prioritize Amendments that Ease, Rather than Further Burden, an Already Depressed Industry Which Has Been Largely Responsible for the LCFS' Success.

With the above in mind, NBB is very concerned about the additional regulatory barriers CARB is contemplating to the continued and expanded use of biomass-based diesel with these proposed amendments. The proposed amendments have the potential to eliminate a large portion of biomass-based diesel volumes, which would adversely affect the viability of the LCFS program. Further, the concerns underpinning the proposed amendments can be addressed in a more scientifically valid and robust way. As discussed below, we are proposing suggested 15-day changes that will achieve the Board's objectives without costly and undue burdens and will provide more of the immediate public health and environmental benefits inherent to biomass-based diesel fuels.

Specific Comments on the Proposed Amendments:

(1) The Proposed Compliant Formulation Requires an Unnecessarily High Blend of Renewable Diesel That Is Not Mandated by CARB's Own Research to Achieve NOx Neutrality.

The amendments propose a formulation that would be deemed to comply with the regulatory requirements without further testing, as follows:

*Blends 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. [Proposed Regulation: Appendix A, section (a)(1)(B)1., emphasis added.]*

The NBB supports the concept of a renewable diesel to biodiesel ratio implied in the above provision. However, there are several issues with the particular language as proposed:

(A) **The percentages in the proposed compliant formulation are mathematically incorrect.** This language is based on CARB's 2011 biodiesel characterization study<sup>7</sup>, from which CARB staff concluded that a blend containing renewable diesel and biodiesel in a 2.75 to 1 ratio, respectively, would be NOx neutral.<sup>8</sup> From a cursory review, one can immediately see that the percentages specified in the above language are plainly wrong. Such a blend containing 75% renewable diesel and 20% biodiesel would yield a RD to BD ratio of 3.75 to 1 ( $75/20 = 3.75$ ), not 2.75 to 1.

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<sup>7</sup> Durbin, Thomas et al., Biodiesel Characterization and NOx Mitigation Study, [https://ww3.arb.ca.gov/fuels/diesel/altdiesel/20111013\\_carb%20final%20biodiesel%20report.pdf](https://ww3.arb.ca.gov/fuels/diesel/altdiesel/20111013_carb%20final%20biodiesel%20report.pdf), accessed April 1, 2020.

<sup>8</sup> ADF Initial Statement of Reasons, Jan. 7, 2020, p. 5 ("Staff has found that ratios of at least 2.75 to 1 of renewable diesel to biodiesel are sufficient to fully mitigate NOx emissions from biodiesel"), [https://ww3.arb.ca.gov/regact/2020/adf2020/isor.pdf?\\_ga=2.62993775.1979421435.1586200160-1675909722.1574251947](https://ww3.arb.ca.gov/regact/2020/adf2020/isor.pdf?_ga=2.62993775.1979421435.1586200160-1675909722.1574251947), accessed April 1, 2020.

This is not a trivial error; it results in a forced demand for renewable diesel that the market cannot meet. For example, if there were 200 million gallons of biodiesel sold in California, 550 million gallons of renewable diesel would be needed to meet the 2.75 to 1 ratio, and 750 million gallons of RD for a 3.75 to 1 ratio. For context, that 200-million-gallon difference represents a 52% increase in the volume of renewable diesel that was supplied to California in all of 2018<sup>9</sup>.

**(B) The 2.75 to 1 ratio reflects an inappropriate objective to move the ADF regulation beyond achieving NOx neutrality.** The ADF regulation was developed in response to CEQA procedural issues revolving around NOx that were raised in the *POET* lawsuits<sup>10</sup>. The purpose of the ADF regulation has always been to maintain NOx neutrality of diesel substitutes relative to CARB diesel<sup>11</sup>, and the amendments should aim for maintaining that NOx neutrality. Indeed, the amendments the Board is now considering were fast-tracked<sup>12</sup> to address a very narrow issue involving biodiesel additives<sup>13</sup>, and the purpose for those changes was expressly stated as maintaining NOx neutrality<sup>14</sup>.

In discussions with CARB staff and from the proposed compliant formulation, it has become apparent that at least one major objective underpinning the proposed amendments is to achieve NOx reductions beyond mere mitigation and neutrality. This is clearly shown by CARB staff's advocacy of an R75/B20 blend as a complying formulation (75% renewable diesel, 20% biodiesel), which by CARB's own research goes far beyond achieving NOx neutrality.<sup>15</sup> While achieving further NOx reductions is a laudable goal, the ADF regulation is not the appropriate mechanism for achieving that goal since further NOx reductions was never discussed during this rulemaking. Indeed, CARB staff have explicitly discussed further NOx reductions as the goal of the upcoming Low Emission Diesel (LED) rulemaking under CARB's 2020 Mobile Source Strategy, which CARB staff has only recently initiated and is nowhere close to completion.<sup>16</sup>

This issue is neither trivial nor a case of semantics; the amendments seek a fundamental restructuring of the ADF regulation from a NOx neutrality measure into a NOx reduction strategy,

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<sup>9</sup> LCFS Dashboard, Fig. 2, <https://ww3.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm>, accessed April 1, 2020.

<sup>10</sup> *POET, LLC v. State Air Resources Board* (2017), 12 Cal.App.5th 152, and related cases.

<sup>11</sup> ADF Initial Statement of Reasons, Jan. 2015, Executive Summary at 11 ("The proposed regulation consists of two major parts: 1) A three stage process for ADFs...including, if necessary, a determination of mitigation measures to ensure no degradation in air quality..."). [Emphasis added.]

<sup>12</sup> Note that CARB staff held the only workshop for discussing the proposed changes in December 2019, just four months ago, with the formal rulemaking being initiated in January 2020. This timeframe is more akin to an emergency rulemaking to address an immediate issue, not a typical 12-24-month, deliberative rulemaking intended to enact a fundamental restructuring of an existing regulation.

<sup>13</sup> See CARB Product Alert: Fuel Additives, Oct. 31, 2019, [https://ww2.arb.ca.gov/sites/default/files/2019-10/ADF\\_Product\\_Alert\\_10-31-19.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-10/ADF_Product_Alert_10-31-19.pdf), accessed Feb. 21, 2020.

<sup>14</sup> ADF Initial Statement of Reasons, Jan. 2020, op cit. at ES-3 ("The objective of the proposed amendments is to ensure that those additives or formulations that pass emissions testing are effective in mitigating potential NOx emissions from biodiesel use"). [Emphasis added.]

<sup>15</sup> Durbin op cit. at Table ES-12.

<sup>16</sup> CARB staff presentation, October 18, 2019, slides 23-24 ([https://ww2.arb.ca.gov/sites/default/files/2019-10/CA\\_Fuels\\_Update\\_Presentation\\_Handout\\_10-18-19.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-10/CA_Fuels_Update_Presentation_Handout_10-18-19.pdf), accessed April 1, 2020).

which raises significant procedural issues that expose the rulemaking to potential legal challenges. Nowhere in CARB's meager 1-page economic impacts analysis for this rulemaking is there any mention, let alone substantive analysis, of the economic impacts that would be incurred in association with efforts to go beyond NOx neutrality and seek to further reduce NOx levels beyond those achieved with the current CARB diesel specifications. Furthermore, there was no effort in this rulemaking to seek those further NOx reductions through a reformulation of CARB diesel, a potentially greater source of NOx reductions than the biofuels that are furthering the LCFS objectives.

It is NBB's understanding that reformulation of CARB diesel is a potential strategy being considered for the LED rulemaking, which again is the appropriate mechanism for seeking further NOx reductions. The LED rulemaking is not slated to be completed until sometime in the 2021-2022 timeframe, and only after extensive testing on next-generation engines and fuel formulations has been completed by CARB staff, as well as completing the requisite environmental and economic impacts analysis required by State law.<sup>17</sup> The proposed amendments' environmental and economic impacts of imposing requirements that go beyond maintaining equivalency with current standards have not been analyzed in the staff report for this rulemaking, thereby exposing it to potential challenges.

- (C) **The 2.75 to 1 ratio itself is excessively high and not supported by CARB's own data as necessary for achieving NOx neutrality.** Studies conducted since the 2011 CARB study indicate the appropriate RD to BD ratio is certainly lower than 2.75 to 1 and probably as low as 1 to 1. As discussed further below, even CARB's own data shows that a 1 to 1 ratio can achieve NOx neutrality. Further, the NBB is aware of emission studies that show full NOx mitigation at a 1 to 1 renewable diesel to biodiesel blend ratio.

The NBB believes the disparity between CARB's 2011 study results and these current studies can be attributed to the properties of the candidate fuels used in the 2011 study. A review of the 2011 report shows that the cetane numbers of both the biodiesel and renewable diesel tested were significantly lower than the BD and RD that are representative of today's California market. As a reminder, cetane number<sup>18</sup> is the biggest contributor to a blend's NOx emissions, with higher cetane numbers resulting in lower NOx emissions. This disparity in cetane numbers would explain why CARB was able to achieve NOx neutrality in the 2011 study with a 1 to 1 ratio RD to BD blend using a cetane enhancer (DTBP); the higher cetane numbers in today's biodiesel and renewable diesel would serve the same purpose in neutralizing NOx as the cetane enhancer used in the 2011 study without the need to go beyond a 1 to 1 ratio.

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<sup>17</sup> See [https://ww2.arb.ca.gov/sites/default/files/2019-10/Fuels\\_Update\\_Concept\\_Paper\\_10-2-19.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-10/Fuels_Update_Concept_Paper_10-2-19.pdf), p. 3, accessed Feb. 9, 2020.

<sup>18</sup> Cetane is a measure of the combustion quality of a fuel used in a compression ignition engine. As such, it serves a similar role for diesel as octane rating does for gasoline.

We would be happy to work with our member company and CARB staff to review the data from the current study so that a more scientifically-justified RD to BD ratio can be reflected in the amendments through a 15-day change.

(D) **The ratio of RD to BD in the biomass portion of the fuel is what determines NOx neutrality, not the total amount of RD and BD in a gallon of fuel.** The proposed language implies that, in a gallon of ADF compliant fuel, virtually the entire gallon would need to consist of mostly renewable diesel (at least 75%), some limited amount of biodiesel (up to 20%), and a couple percent of CARB diesel. However, this language misinterprets CARB's own study. According to its own 2011 biodiesel characterization study, CARB found that NOx neutrality was achieved when CARB diesel was blended with a portion of biomass-based diesel containing specific ratios of renewable diesel and biodiesel, ranging from 1 to 1 to 2.75 to 1 (renewable diesel to biodiesel, respectively). To illustrate, a blend containing 80% CARB diesel, 10% renewable diesel, and 10% biodiesel, with 0.25% DTBP (a well-established cetane enhancer) was found to be NOx neutral. That blend contained RD and BD in a 1 to 1 ratio in the biomass portion. Another blend tested -- containing 25% CARB diesel, 55% renewable diesel, and 20 percent biodiesel -- was also found to be NOx neutral (indeed, it was slightly NOx reducing relative to CARB diesel). That blend contained RD and BD in a 2.75 to 1 ratio, again in the biomass portion.

These two blends show that it was not required for the entire volume of fuel be comprised solely of renewable diesel and biodiesel (with a small amount of petroleum diesel allowed) to achieve NOx neutrality, as the proposed language seems to suggest. Instead, CARB's research showed that a NOx neutral RD to BD ratio applies to the biomass portion of the fuel blend, not the total amount of renewable diesel and biodiesel in a gallon of fuel.

(2) NBB Proposes an Alternative Method and Metric for Determining When the Appropriate Ratio of Renewable Diesel to Biodiesel Has Been Reached

As noted, NBB supports the concept of a simplified metric like a renewable diesel to biodiesel ratio. However, we believe the concept as proposed in the amendments is somewhat flawed and would be very difficult, if not impossible, to implement and enforce at the pump. As NBB understands it, the RD to BD ratio is intended to be applied to individual ADF formulations in each dispensed gallon consisting of renewable diesel and biodiesel blends. The intent is to apply this ratio to each gallon of biodiesel blend above 5 percent<sup>19</sup> so that each gallon of a blended fuel that is sent into a vehicle's engine contains the requisite ratio of RD to BD.

The problem with this approach stems from the fact that retail stations commingle all fuel deliveries they receive from distributors into their underground storage tanks. This means that, even if a station starts with the appropriate RD to BD ratio in its underground storage tank, commingling of deliveries of diesel and diesel blends with varying RD and BD contents will eventually result in a mixture that

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<sup>19</sup> Diesel containing no more than 5 percent biodiesel is treated the same as conventional petroleum diesel for all purposes, thereby requiring no NOx mitigation measures.

may no longer meet this particular ratio. Therefore, it is unlikely and impractical for the ratio to be enforced through sampling of fuel at the pump.

As an alternative to this scenario, NBB proposes to work with CARB staff to develop a similar but system-wide ratio metric based on aggregate RD and BD volumes that are already reported to CARB through its existing LCFS-CBTS online reporting system. The 2018 LCFS data, the most recent year with complete data, shows a system-wide RD to BD ratio that is already over 2.1 to 1. This ratio has been increasing steadily in recent years due to growing demand for biomass-based diesel. This means that, depending on the ratio that is adopted, the NOx mitigation requirement for B20 blends that is due to sunset in 2023 may have already been reached or will be reached before 2023<sup>20</sup>, if current sales trends of RD and BD volume continue into 2019, 2020 and beyond.

CARB's own staff report for this rulemaking acknowledges that renewable diesel and biodiesel can be shown, both per gallon and on a regional basis, to provide NOx equivalency using a system-wide, aggregated approach:

"Based on prior CARB testing and stakeholder certifications of renewable diesel, staff has found that renewable diesel is able to mitigate potential NOx emissions increases from biodiesel, relative to CARB Diesel, when used in the same blend. Renewable diesel is also able to offset NOx emissions increases from biodiesel when used in the same geographical region. Staff has found that ratios of at least 2.75 to 1 of renewable diesel to biodiesel are sufficient to fully mitigate NOx emissions from biodiesel..."<sup>21</sup> [Emphasis added, internal citations omitted.]

Based on this, NBB requests the Board to direct CARB staff to work with us during the first half of 2020 (when complete 2019 and partial 2020 LCFS data are reported) to develop a protocol for determining when the appropriate RD to BD ratio for reaching NOx neutrality (as discussed above) has been or is projected to be reached. We believe an appropriate protocol could be developed that uses a combination of LCFS reporting data, product transfer document records, and limited station sampling to corroborate the RD to BD ratio.

(3) NBB Remains Highly Concerned with the Proposed 2-Lab Certification Process and Proposes Instead A Round Robin Test Program in Accordance with Standard Best Practices to Address CARB Concerns.

We submitted comments with regard to the proposed two-laboratory certification process when it was first proposed at CARB's workshop on December 13, 2019, and those comments are incorporated herein by reference in the Attachment. We are reiterating those comments since the proposed amendments do not address the substantive comments NBB provided. In summary, the proposed

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<sup>20</sup> The current regulation would sunset the NOx mitigation requirement for B20 in 2023 for on-road diesel, which is when at least 90% of the vehicle miles traveled by on-road HDVs are projected to be made by post-2010 new technology diesel engines employing selective catalytic reduction and diesel particulate filters to control NOx and diesel PM.

<sup>21</sup> ADF Initial Statement of Reasons, Jan. 2020, op cit. at 5.

two-lab certification process for biodiesel formulations and biodiesel additives is unprecedented<sup>22</sup> and unfair since it applies only to biodiesel and biodiesel formulations<sup>23</sup>, while giving a pass to petroleum diesel, gasoline and other fuels. Most importantly, the two-lab certification process is premised on flawed or unsupportable assumptions<sup>24</sup> and are therefore scientifically invalid.

To address these concerns, NBB reiterates its request for the two-lab certification requirement<sup>25</sup> to be deleted or suspended until a scientifically valid, robust, and transparent round-robin test program can be conducted with the University of California, Riverside's CE-CERT lab, Southwest Research Institute (SwRI), West Virginia University, and any other qualified labs to identify and quantify any intralaboratory biases that may be occurring while conducting the prescribed protocols. This would allow scientifically-based enhancements of the current test protocol to address the staff concerns without effectively giving the CE-CERT lab a virtual monopoly on biodiesel and ADF certifications. As written, the proposed amendments would be incorporated into the regulation without any validation of the protocols with other labs besides CE-CERT, a scientifically-questionable approach that is inconsistent with CARB's prior best practices for protocol development. The NBB stands ready and willing to collaborate with CARB and other interested parties to develop and conduct such a round-robin test program.

**(4) The Staff Report's Technical Feasibility and Impacts Analyses Do Not Capture or Accurately Reflect the Impacts from the Proposed Amendments.**

As noted, the Staff Report's economic impacts analysis is less than one page long. The meager analysis looked solely at increased costs to three biodiesel additives producers to conduct the extensive changes being proposed as part of the new 2-lab certification process. Even assuming for the sake of argument that those costs are accurate for additives suppliers, the analysis falls far short of a complete evaluation of the regulatory impacts from the proposed amendments.

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<sup>22</sup> As noted in NBB's comment letter (dated Dec. 20, 2019), a two-lab certification process is unprecedented at CARB or any other regulatory agency.

<sup>23</sup> As noted in NBB's Dec. 2019 comment letter, the proposed two-lab certification scheme would apply only to biodiesel (the only commercially available ADF fuel) and biodiesel additives; it would not be applied to any other fuel, renewable or petroleum based. Indeed, it is not even applied to conventional petroleum diesel formulations subject to existing CARB regulations under title 13. Those petroleum-based diesel formulations generate the high GHG and diesel PM emissions that CARB has been trying to reduce through the LCFS and other programs. In effect, CARB would be subjecting to this onerous requirement the renewable biofuels that are largely responsible for the LCFS' success to date, while giving petroleum-based diesel formulations a free pass when they are claimed to achieve equivalent emissions to reference CARB diesel.

<sup>24</sup> The proposed two-lab certification process appears to stem from a CARB belief that U.C. Riverside's CE-CERT lab, and only the CE-CERT lab, performs the prescribed certification correctly, while world-renowned labs like Southwest Research Institute (SwRI) and West Virginia University (WVU) do not. As a reminder, the latter two research labs have collaborated with CARB on a number of past projects, most recently on uncovering the Volkswagen diesel cheating scandal. Indeed, it is NBB's understanding that one or both of these facilities have performed the certifications for all or nearly all of the existing conventional or alternative conventional diesel formulations CARB has certified with Executive Orders in the past.

<sup>25</sup> Proposed amendment to title 13, California Code of Regulations (CCR), section 2293.6(a)(2)(F), see [https://ww3.arb.ca.gov/regact/2020/adf2020/isorappa.pdf?\\_ga=2.144953340.934330685.1582150244-1675909722.1574251947](https://ww3.arb.ca.gov/regact/2020/adf2020/isorappa.pdf?_ga=2.144953340.934330685.1582150244-1675909722.1574251947), Appendix A, p. A-11, accessed Feb. 10, 2020.

For example, there was no attempt to estimate certification costs for biodiesel producers to certify non-additive based ADF formulations at less than the 75%/20% renewable diesel and biodiesel blend that is proposed as a compliant formulation. In other words, with the proposed language as written, every biodiesel formulator that is looking to sell a compliant formulation containing more than 10% biodiesel<sup>26</sup> and less than 75% renewable diesel would need to undertake the \$525,000 certification procedure for each such formulation.

There are currently about 40 unique entities with about 120 certified biodiesel fuel pathways in the LCFS program.<sup>27</sup> Therefore, if each of those 40 companies needs to certify just one of their formulations, the total cost impacts on just the biodiesel producers would be \$21 million, not the mere \$1.6 million shown in the staff analysis.

Similarly, the technical feasibility analysis assumes, without evidence, that biodiesel additives manufacturers and biodiesel producers will be able to make formulations that meet the new certification procedure. The Staff Report provides no evidence that a known NOx-neutral formulation, undergoing the proposed certification at two labs, will get corroborating test results from the two labs. And the proposed amendments are completely silent on how to treat results that differ between the two labs. For these and other reasons, NBB is strongly opposed to the new certification procedures and recommends a transparent round-robin testing program to address and meet the Board's objectives.

#### (5) The Process for Developing These Amendments Falls Far Short of the Board's Prior Practices

We understand the limitations the pandemic has had on the ability of CARB to engage with stakeholders. Even with this caveat, however, we found the rulemaking development process wholly inadequate and falling well short of the Board's historical standards for stakeholder engagement. As far reaching as these amendments are, we are highly disappointed in the lack of engagement with stakeholders that has taken place to date, despite our best efforts to discuss our concerns with policymakers at CARB. Despite the important implications these amendments will have on our industry and the LCFS, we have only succeeded in scheduling and holding one discussion with CARB since staff first posted concepts in December 2019.

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<sup>26</sup> The seasonal allowances for B10 in the current regulation would carry over under the amendments. See title 13, CCR, section 2293.6(a)(1)(A), Appendix A, p. A-2.

<sup>27</sup> LCFS Current Fuel Pathways, [https://ww3.arb.ca.gov/fuels/lcfs/fuelpathways/current-pathways\\_all.xlsx](https://ww3.arb.ca.gov/fuels/lcfs/fuelpathways/current-pathways_all.xlsx), accessed April 8, 2020.

## Recommendations

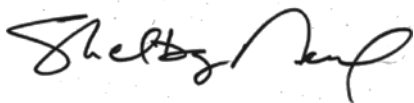
We recommend 15-day changes to the amendments and related actions as follows (see also Attachment II):

- (A) Revise "Approved ADF Formulations" to "Blends consisting ~~solely~~ of renewable hydrocarbon diesel (RHD) at not less than 75 percent by volume, and biodiesel (BD) with 2.75 parts RHD to 1 part BD, on a volume basis, with the remainder comprising CARB diesel, and CARB diesel, where the total biodiesel content of the blend does not exceed 20 percent by volume, or blends with a lower RHD to BD ratio determined by the Executive Officer as producing NOx emissions equivalent to CARB diesel. Compliance with the 2.75 to 1 ratio or alternative ratio approved by the Executive Officer shall be determined through LCFS data and/or monthly delivery receipts for stations selling biodiesel blends greater than B10.
- (B) Direct staff to work with NBB and other interested stakeholders to review current emissions testing data in support of a RHD to BD ratio alternative ratio(s) shown to achieve NOx neutrality relative to CARB diesel;
- (C) Direct staff to work with NBB and other interested stakeholders to develop a protocol for implementing the RHD to BD ratio or alternative ratio on a system-wide, aggregate basis;
- (D) Delete or suspend the 2-lab certification procedure and related requirements, as discussed in Attachment I, pending completion of the suggested round-robin testing. Direct staff to work with NBB, qualified emissions testing labs, and other interested stakeholders to develop and conduct the suggested round-robin testing; and
- (E) Permit continued sale of currently certified formulations pending completion of the suggested round-robin testing.

## Conclusions

We appreciate the good working relationship we have developed with CARB over many years and look forward to working cooperatively and productively to address the concerns we raised above. Adoption of these recommendations will help ensure that biomass-diesel fuels will continue to play the strong role they have played historically and must continue to play while California works toward a much lower carbon future.

Sincerely,



Shelby Neal  
Director of State Governmental Affairs

## Attachment I

NBB Comments on the Proposed 2-Lab Certification Procedure  
(Submitted in response to CARB's December 13, 2019 workshop)



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December 20, 2019

Alexander "Lex" Mitchell  
Manager, Emerging Technology Section  
California Air Resources Board  
P.O. Box 2815  
Sacramento, CA 95812

RE: Initial NBB Comments on Potential ADF Amendments Discussed at December 13th Workshop

Dear Mr. Mitchell:

Thank you for the opportunity to comment on the potential amendments discussed at the December 13, 2019 workshop. The National Biodiesel Board (NBB) is the national association for the U.S. biodiesel and renewable diesel industries. We continue to appreciate the leadership the California Air Resources Board (CARB) has shown in implementing the groundbreaking Low Carbon Fuel Standard (LCFS) and its companion Alternative Diesel Fuel (ADF) regulation.

Biodiesel and renewable diesel continue to perform well under the LCFS. Biomass-based diesel volumes have increased from 16 million gallons in 2011 to 630 million gallons in 2018 and are expected to reach 1 billion gallons in 2020. These diesel replacements have transitioned from modest credit generators to mainstays of the program, accounting for 46% of LCFS credit generation in 2018. As such, biomass-based diesel fuels have provided the lion's share of the LCFS credits to date (cumulatively 41% of all credits generated since 2011) and have therefore been a key contributor to the LCFS' success. The credits generated by biomass-based diesel fuels have, to a large degree, enabled the LCFS to overcome the challenges in meeting the gasoline compliance standards due to the fact that cellulosic ethanol production never materialized as expected. And given the expected gradual penetration of electrified vehicles in the medium- and heavy-duty sectors, the LCFS will continue to rely on biomass-based diesel for many years to provide the high energy-density fuels that freight transportation and other heavy-duty engine applications require.

With this in mind, NBB is very concerned about the barriers CARB is contemplating to the continued and expanded use of biomass-based diesel with these potential amendments. Our comments are provided in the spirit of improving both the process in which these amendments are developed and the substance of the amendments themselves.

Process concerns: The rescheduled workshop conflicted with the semi-annual ASTM meeting, severely limiting the participation of parties integral to the development of any ADF amendments.

The National Biodiesel Board is very disappointed that the workshop was rescheduled to December 13th, as many of the biodiesel industry technical experts were already committed to participate in the semi-annual ASTM meetings also held that week and could not re-arrange their schedules for the workshop. CARB has a number of ASTM members, so the agency was presumably aware of the conflict. Given the significant amount of biodiesel activity at ASTM, our technical staff has not yet had an opportunity to fully review and evaluate the potential changes proposed at the workshop. Moving forward, we hope that additional public workshops are scheduled to allow for maximum participation of relevant and interested parties, including the National Biodiesel Board.

Substantive concerns: The proposed two-lab certification process is unprecedented, inequitable, and could result in a de facto California-lab veto over the results from other, equally qualified labs.

CARB staff proposes to revise the certification process to require ADF applicants to run duplicate tests through two separate labs. With the added requirement for testing a diesel fuel produced at a California refinery at one of the laboratories, this essentially puts in a requirement that one of the labs be the University of California, Riverside's (UCR) CE-CERT lab. Obviously, this effectively doubles the certification costs for every applicant, and certification with a single lab already constitutes a substantial cost and barrier to market entry for any applicant. More importantly, this proposal is fundamentally flawed and inequitable for several reasons.

First, to our knowledge, such a two-lab certification requirement is unprecedented at CARB (or any other regulatory agency) and is applied to no other fuel, renewable- or petroleum-based. Indeed, it is not even applied to conventional petroleum diesel formulations subject to existing CARB regulations under title 13, California Code of Regulations (CCR), section 2282 or section 2700. As a reminder, those petroleum-based diesel and alternative diesel formulations generate the high GHG and diesel particulate matter emissions that CARB has been trying to reduce through its LCFS and other programs. In effect, CARB would be subjecting to this onerous requirement the same renewable biofuels that are largely responsible for the LCFS' success to date -- the biofuels which have substantially reduced GHG and diesel PM emissions from the heavy duty sector -- while giving petroleum-based, conventional and alternative diesel formulations a pass when they are claimed to achieve equivalent emissions to the reference fuels.

Second, the proposal is structured to not only essentially require UCR CE-CERT to be one of the two labs, but it also provides that UCR CE-CERT's results would trump the results from any other lab used. This would be true even if an applicant used three labs, with UCR CE-CERT's results overriding corroborating results from the other labs. There seems to be little point in requiring two labs for certification testing; if CARB's intent is to have all testing be done by one lab in the U.S., why not simply state that? Of course, we are not suggesting that all certification be done by UCR CE-CERT, but

the proposed amendments would effectively render moot the use of any other lab besides UCR CE-CERT (as well as being a superfluous and substantial expenditure of resources by the applicant).

Third, the two-lab proposed requirement, and the implicit requirement for UCR CE-CERT to be one of the labs with veto power over the results of any other lab, appears to be premised on the assumption that Southwest Research Institute's (SwRI) compliance with the existing test protocols is somehow faulty. This assumption would also apply by extension to similar testing performed by West Virginia University (WVU) or any other qualified lab. As a reminder, it is our understanding that all or nearly all testing submitted by the petroleum refiners under 13 CCR 2282 or 2700 have been performed by SwRI or WVU. If CARB staff is concerned about the validity of the testing performed by those labs, wouldn't that raise questions about the validity of all Executive Orders issued under 13 CCR sections 2282 or 2700? Again, applying this assumption against testing done for biofuels, but not for conventional petroleum diesel formulations, suggests a potential agency bias against the very biofuels that are central to the success of the LCFS program.

Substantive concerns: If CARB's aim is to improve the testing of ADF formulations and additives, quantifying intra- and interlaboratory bias and variability is a much better and more valid way to accomplish that without requiring a two-lab certification process.

Respectfully, we believe the proposed requirement for a two-lab certification misses the point. As noted above, the proposal appears to assume without proof that UCR CE-CERT performs the testing the "correct" way while SwRI and WVU do not. But it is equally valid to assume the reverse: that UCR CE-CERT is incorrectly applying the protocol, and SwRI and WVU have been applying it correctly. Clearly, it is unproductive to make either assumption. The desired approach and outcome, for both CARB and applicants, should be testing to determine intra-laboratory biases, if they exist, and establish an improved certification protocol with better quantified variability so that any single, qualified lab can perform the testing -- the results, if they fall within that variability, should be held as valid.

NBB was just one of the entities that worked with SwRI to conduct the testing on B20 additive formulations for NOx mitigation under the recent ADF certification test procedures put into place for B20 by CARB. The ADF certification procedures were put into place by CARB after a significant amount of public input and internal CARB review in order to support increasing levels of new low carbon fuels coming into California expected as a response to the LCFS' strong market signal. While there may be opportunities for improvement, the existing CARB emissions testing procedures are far in excess of any other regulatory entity in the U.S., and they already represent a significant financial burden and barrier to entry for the new low carbon fuels needed to meet the California LCFS.

While the CARB protocols are the most stringent available, CARB's proposed amendments would further exacerbate the situation by potentially resulting in two different but well-qualified laboratories conducting tests using prescribed procedures and protocols allowed under the

regulation and coming up with fairly similar results—but results that are nonetheless different enough to result in one lab showing the fuel package as meeting the NO<sub>x</sub> equivalency value, and the other failing the same value. This dilemma is not resolved by having one lab's results trump the other's (as discussed above); the scientifically valid practice is instead to identify and quantify intralaboratory biases and interlaboratory variability and reflect that information in the protocol.

When differing results from different laboratories happen in other areas—as it often does when different entities use the same testing methods but different equipment, analysts, and lab facilities—the most common and scientifically valid way to address these discrepancies is to conduct round robin testing using the same exact fuels and the same exact testing procedures, along with careful attention to following the procedures used. In drastic cases, a third-party auditor is used to review and evaluate the testing procedures of each lab before-hand, as well as witness the testing as it is performed in order to identify discrepancies. This comparison can be used to help determine whether there is an inherent bias from one lab versus another due to a procedure or practice which is either not being followed properly or that is having an unanticipated impact on the test result, or just simply normal variation that is expected to occur from one testing laboratory to another.

Many of the OEMs utilize SwRI because of their many years of testing experience and their expertise in conducting emissions testing. Over the years, OEMs—as well as NBB—have become confident in the emissions values produced at SwRI, which is why SwRI is such a well-respected laboratory for emissions regulatory work. Indeed, according to SwRI many of the previous CARB certifications for existing petroleum-based diesel fuel were run at SwRI. It may very well be that UCR CE-CERT has an inherently high bias on NO<sub>x</sub> results, and that could be the reason why ALL of the UCR CE-CERT retest results for the B20 formulations were higher than those from SwRI. If these biases do exist, then the proposed changes of running the testing at two different labs against two different fuels could result in the same conflicting results as CARB is currently facing—if UCR CE-CERT is one of the labs chosen. Alternatively, if the bias exists on the SwRI side, then it could very well bring into question most, if not all, of the existing CARB certifications for conventional diesel fuel in addition to the existing B20 additive formulations.

As noted, the proposed changes would serve as an onerous and substantial barrier to NO<sub>x</sub> mitigated biodiesel formulations entering the California market, a market in which biodiesel has played a substantial role in ensuring the success of the LCFS (along with renewable diesel). Therefore, we recommend that CARB institute round-robin emissions testing between SwRI, WVU, and UCR CE-CERT (and potentially other qualified facilities) to determine if the differences observed are simply lab or other procedural biases. This testing should use the prescribed Series 60 engine with the same exact CARB48-10 reference fuels and additized fuels and use the same exact protocol to determine the extent the differences observed may be due to an inherent bias between the labs or the procedures or due to random variation between the laboratories. The fuels can be sourced and blended at an agreed-upon third party, as is commonly done for ASTM round robins on analytical test procedures.

NBB will offer to work with ASTM to assist CARB in locating an acceptable third-party blending laboratory.

Further, a third-party expert emissions auditor (or panel of auditors) should review the QA/QC and testing procedures of each entity (which will mostly likely need to be done under confidentiality) to identify potential discrepancies and observe the testing done at each laboratory. Based on this, an assessment can be made on whether there is an inherent bias between labs or other procedural differences which may have resulted in the existing varying results, or whether the differences observed may have been due to other factors CARB has addressed in the proposal such as chain of custody, additive blending, replicate analytical testing, etc.

It is our hope this data could be used by CARB to identify whether sources of variation or bias due to the laboratory practices and/or engine operation exist, and that changes or modifications to reduce that variation could be put into play so only one laboratory engine test and one reference fuel is needed for B20 additive formulation testing—or other future emissions certification testing under the ADF or other CARB certifications. This will not only help ensure emission testing for CARB is of the highest quality and scientific veracity, it will also substantially lessen the barriers to entry for new low carbon fuels needed to meet the LCFS.

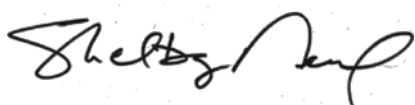
#### Substantive concerns: Timing of retesting, engine selection and additional CARB fuel for testing

Our initial review has also raised concerns on the overall inadequate amount of time for retesting and the lack of availability of test cells with the proposed changes should they be implemented as-is; the requirement for the testing to be done only with the Cummins ISB engine with which no other fuels have been certified and with which limited data are available; and the requirement for testing with an additional CARB diesel, which is also not required for other fuel formulations.

#### Conclusions

We appreciate the good working relationship we have developed with CARB and look forward to working cooperatively and productively with CARB to address the concerns we raised above. Because we were limited in our ability to review the potential amendments discussed at the workshop, we offer our initial procedural and substantive comments and may provide further comments after the holidays when our staff has had more time to consider the significant changes proposed by CARB.

Sincerely,

A handwritten signature in black ink, appearing to read "Shelby Neal", with a stylized, cursive script.

Shelby Neal  
Director of State Governmental Affairs

## Attachment II

### NBB and CABA Proposed Changes to Resolution 20-02

BE IT FURTHER RESOLVED that the Board hereby approves for adoption amendments to section 2293.3 and Appendix 1 of Subarticle 2, title 13, California Code of Regulations, as set forth in Attachment A and modified in Attachment B.

BE IT FURTHER RESOLVED that the Board hereby directs the Executive Officer to convene a working group with stakeholders within 30 days of this hearing to develop recommendations for addressing the interlaboratory variability concerns raised by stakeholders and their suggested round-robin testing program. The Executive Officer is further directed to report back to the Board on the recommendations by the working group within 30 days of the completion of the working group's efforts.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to work with stakeholders through a public process to address concerns raised at the April 23, 2020 hearing and determine if additional conforming modifications to the regulation are appropriate. If no additional modifications are appropriate, the Executive Officer shall take final action to adopt the regulation, as set forth in Attachment A. If the Executive Officer determines that additional conforming modifications are appropriate, the modified regulatory language shall be made available for public comment, with any additional supporting documents and information. The Executive Officer shall consider written comments submitted during the public review period and make any further modifications that are appropriate available for public comment for at least 15 days. The Executive Officer may present the regulation to the Board for further consideration if warranted, and if not, the Executive Officer shall take final action to adopt the regulation after addressing all appropriate conforming modifications.

## Attachment B

Proposed 15-Day Changes to the Amendments in Attachment A [proposed 15-day changes shown in ~~double~~ ~~strikeout~~ and double underline to denote deletions and additions, respectively]

Appendix 1 of Subarticle 2, section (a)(1)(B), as follows:

### (B) ~~{Reserved}~~ Approved ADF Formulations

Blends consisting ~~solely~~ of renewable hydrocarbon diesel (RHD) ~~at not less than 75 percent by volume,~~ and biodiesel (BD) with 2.75 parts RHD to 1 part BD, on a volume basis, with the remainder comprising CARB diesel, ~~and CARB diesel, where the total biodiesel content of the blend does not exceed 20 percent by volume,~~ or blends with a lower RHD to BD ratio determined by the Executive Officer as producing NOx emissions equivalent to CARB diesel. Compliance with the 2.75 to 1 ratio or alternative ratio approved by the Executive Officer shall be determined through LCFS data and/or monthly delivery receipts for stations selling biodiesel blends greater than B10.