September 3, 2021

Richard Corey, Executive Officer
California Air Resources Board
P.O. Box 2815
1101 I Street
Sacramento, CA 95814

Re: NBB Comments on 2022 GHG Scoping Plan Scenario Concepts

Dear Mr. Corey:

Thank you for the opportunity to provide comments on the 2022 GHG Scoping Plan Scenario Concepts (held August 17, 2021), which will be used to inform modeling on various strategies to achieve carbon neutrality by 2035 or 2045. The National Biodiesel Board (NBB) is the U.S. trade association representing the entire biodiesel and renewable diesel value chain, including producers, feedstock suppliers, and fuel distributors. The California Advanced Biofuels Alliance (CABA) is a not-for-profit trade association promoting the increased use and production of advanced biofuels in California. CABA has represented biomass-based diesel (BMBD) feedstock suppliers, producers, distributors, retailers, and fleets on state and federal legislative and regulatory issues since 2006. The NBB and CABA offer the following comments for your consideration. Our comments build on the previous NBB comments submitted in July 2021.

We understand CARB has requested comments by September 3, 2021; we are working on modeling to derive specific, pre-2030 carbon intensity targets but anticipate that work will take additional time. Once completed, we will submit for CARB's consideration the results of that work to supplement our comments in this letter.

Essentially, the August 17th workshop poses the question of whether CARB's climate programs, including the state's Low Carbon Fuel Standard (LCFS), should be revised to incorporate accelerated carbon intensity (CI) reduction targets pre- and post-2030. NBB and CABA believe seeking more aggressive CI targets is appropriate to help the state achieve its GHG and carbon neutrality goals and offers the following comments in support of that position.

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Avoiding and Reducing New Anthropogenic Carbon Emissions Is Key to Achieving Carbon Neutrality

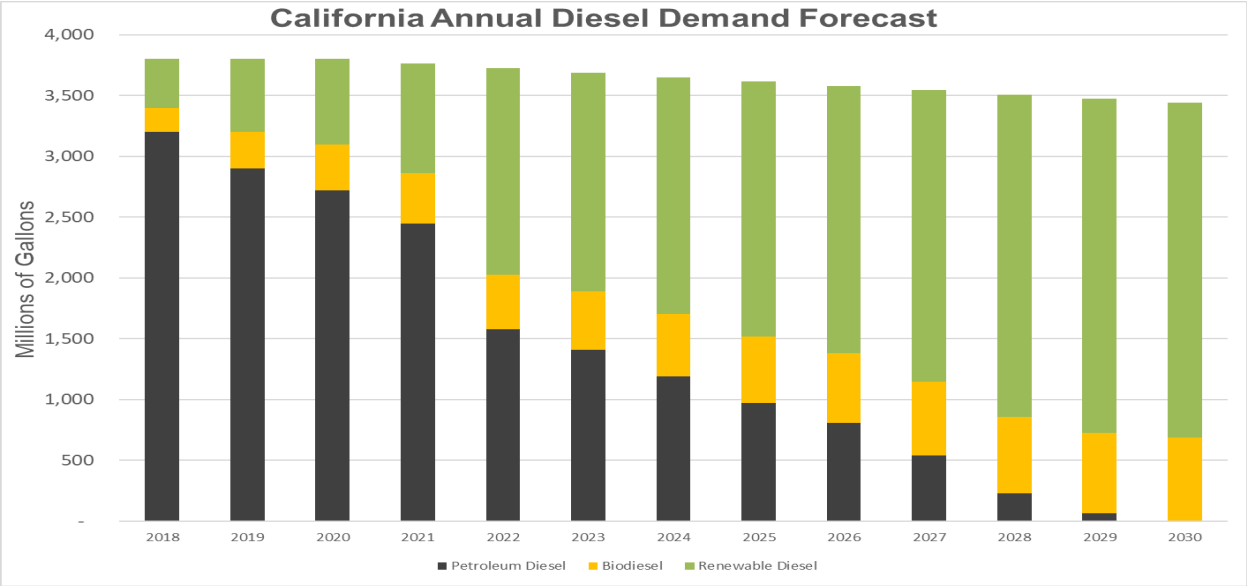
It is a truism that bears repeating: To achieve carbon neutrality, new carbon emissions must be eliminated or reduced to the maximum extent feasible. The use of petroleum fuels in transport continues to be the largest source of anthropogenic emissions in California, so strategies to address climate change and achieve carbon neutrality as quickly as possible must have, at a minimum, the goal of eliminating, or reducing to the maximum extent feasible, the use of petroleum fuel[1]. While the current LCFS carbon intensity (CI) reduction targets of 10% by 2022 and 20% by 2030 are aggressive, we believe even more stringent CI reduction targets are feasible in the 2025-2035 timeframe.

CABA's 2030 Roadmap Outlines a Pathway Toward Elimination of Petrodiesel by 2030

Released in February 2019, the CABA 2030 Roadmap[2] provides a good starting point[3] for exploring pathways that can lead to a substantial reduction or even elimination of petroleum diesel use in California's transportation sector by 2030. The Roadmap assumes the current trend of companies switching vehicles from liquid petroleum diesel fuel into renewable natural gas, electricity and hydrogen will accelerate in the years ahead.[4] With the increasing use of these alternative fuels and continuing vehicle efficiency gains, the Roadmap projects that demand for liquid diesel fuels will decrease from today's current 3.6 billion gallons to approximately 3.4 billion gallons by 2030 (Fig. 1). Thus, approximately 3.4 billion gallons of sustainable biodiesel and renewable diesel[5] (collectively known as biomass-based diesel) would be needed in California to completely displace the remaining demand for liquid fuel in the California diesel market (i.e., the medium and heavy duty transportation sector). The Roadmap yields a liquid diesel fuel pool composition of 80 percent renewable diesel and 20 percent biodiesel at the 2030 endpoint.

[1] Transition from petroleum fuel use in transportation and other sectors has also been identified as an objective in Governor Newsom's EO N-79-20 and other executive orders.
[2] CABA 2030 Roadmap, https://a28e0892-6205-4975-9273-0eef57303b07.filesusr.com/ugd/8efc2e_0dce73a10967444895bfa0128fcd1ef4.pdf, accessed 9/1/2021.
[3] Application of the CABA 2030 Roadmap to CARB's proposed 2022 Scoping Plan modeling would likely require some updates to the Roadmap inputs and assumptions to reflect industry and market developments that have occurred since publication of the Roadmap. Nonetheless, the Roadmap remains useful as a starting point for the intended modeling.
[4] CABA 2030 Roadmap at 3.
[5] Biodiesel and renewable diesel are among the most sustainable transportation fuels available, made from a wide variety of waste and by-product feedstocks such as used cooking oil, distillers corn oil, rendered animal tallow, and lipid byproducts of soy and canola protein production. Biodiesel is produced from such feedstocks through a chemical process called transesterification. By contrast, renewable diesel is made from the same types of sustainable feedstocks but through essentially the same processes as those used in current petroleum refineries.

Fig. 1 Biomass-based Diesel Provides the Bulk of Transportation Fuel Carbon Reductions



CABA 2030 Roadmap at 2.

Feasibility of 3.4 Billion Gallons of Renewable Diesel and Biodiesel in California by 2030

Much of the recent news involving renewable diesel (RD) has focused on numerous announcements of new or expanded RD production. Based on those announced and developing projects, the Energy Information Agency (EIA) forecasts that the U.S. could have 5.1 billion gallons of renewable diesel production capacity by 2024[6], up from the current 0.91 billion gallons of production capacity[7]. Even if only half (about 2.7 billion gallons) of that announced capacity comes online by 2030, the 3.4 billion gallons of biomass-based diesel needed to displace petroleum diesel would be achievable through the use of that 2.7 billion gallons of renewable diesel coupled with approximately 700 million gallons of biodiesel[8,9]. This is well within the current U.S. biodiesel production capacity of 2.4 billion gallons of biodiesel[10].

[6] U.S. Energy Information Administration, https://www.eia.gov/todayinenergy/detail.php?id=48916, accessed Sept. 1, 2021.

[7] U.S. Energy Information Administration, https://www.eia.gov/biofuels/update/table1.pdf, accessed Sept. 3, 2021.

[8] Note that Bob Nelson, Senior Analyst, Jacobsen Fastmarkets, projected 3.16 billion gallons of renewable diesel production capacity from plants under construction or otherwise with an estimated 50% or greater probability of coming online within the next few years. The Jacobsen Fuel & Feedstock Conference 2021, Denver, Colorado, Aug. 25-26, 2021.

[9] 2.7 billion gallons of renewable diesel (assuming virtually all of it goes to California as it currently does) and 700 million gallons of biodiesel would yield an overall fuel pool composition of 80% renewable diesel and 20% biodiesel (R80/B20).

[10] U.S. Energy Information Administration, https://www.eia.gov/biofuels/biodiesel/capacity/. It should be noted that the National Biodiesel Board's feedstock analysis provided the basis for its 2020 Vision, which projects the use

Deep Electrification is Appropriate but Not Enough

The state's aggressive effort to electrify as many sectors as quickly as possible is laudable and an appropriate element in any well-designed strategy to address climate change. However, as other Scoping Plan workshop attendees have observed, that "silver bullet," single technology focus on electrification glosses over the fact that deep electrification, especially in the heavy duty transportation sector, is many years if not decades away[11]. From a climate impact standpoint, waiting for the carbon reductions to be achieved through long-term measures like deep electrification ignores a critically important consideration -- the time value of carbon. Put simply, substantial reductions in carbon emissions now are vastly superior from a climate impact standpoint than the same reductions occurring many years in the future. Preventing an anthropogenic CO_2 emission today ensures we avoid the induced radiative forcing for the critical years to come. The need to reduce carbon emissions deeply and immediately to avoid the worst effects of climate change was recently underscored by the August 2021 release of the Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report[12].

Further, a number of workshop attendees, including members of the Environmental Justice Advisory Committee (EJAC), also questioned the Scoping Plan Update's focus on reaching carbon neutrality in 2045 when the state has not yet shown how it would reach the earlier 2030 target while reducing important criteria and toxic emissions affecting the residents of disadvantaged and EJ communities. A more comprehensive approach is needed, one that not only looks down the road to 2045 and beyond, but also fills in the years between now and then with meaningful measures and policies that achieve both carbon reductions and improvements in public health in the years while the state waits for an electrified future.

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of 6 billion gallons or more of biodiesel, renewable diesel, and sustainable aviation fuel by 2030. See NBB Vision 2020, visited 9/1/2021.

[11] The rulemaking record for CARB's recently adopted Advanced Clean Trucks regulation, touted to be significantly more aggressive than the original staff proposal, suggests around a 10% penetration of electric Class 7-8 heavy duty trucks by VMT by 2040, a class which represents the largest share of HDV emissions from the heavy duty sector and is also among the most difficult to electrify. See Appendix D of the ACT Initial Statement of Reasons. Current EMFAC 2021 modeling suggests up to about 20% penetration in Class 7-8 of electric heavy duty trucks. See https://arb.ca.gov/emfac/emissions-inventory/e3bf31fc713b4b13169733c0edd3a62e45d97d3c. This inherent difficulty in electrifying the heavy duty sector is also recognized in the Governor's Executive Order N-79-20, which includes the caveat "where feasible" in a number of directives to state agencies when pursuing actions to achieve zero emissions in medium and heavy duty vehicle operations by 2045.

[12] IPCC AR6, available at https://www.ipcc.ch/assessment-report/ar6/.

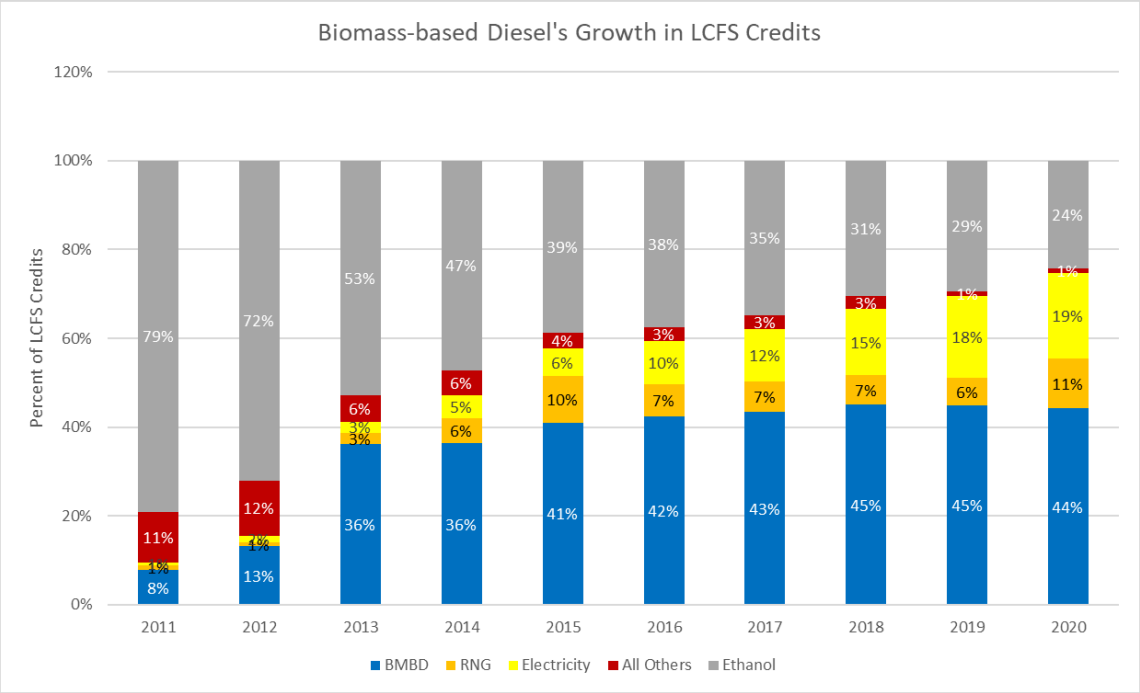
Immediate Carbon Reductions are Available through Use of Drop-In Biofuels Now While the State Pursues Deep Electrification

The state can and should do better. Biomass-based diesel is a drop-in solution available right now, which can provide immediate and continuing reductions in carbon emissions (upwards of 86%[13] or more, on par with electricity). These sustainable diesel replacements are already providing the bulk of the state's carbon reductions under its LCFS program. This success has been partly enabled by the fuel's compatibility with existing infrastructure. Biomass-based diesel has reduced carbon emissions by more than 32.3 million metric tons in California since 2011, 6.8 million metric tons in 2020 alone, equivalent to removing more than 1.4 million cars off the road last year. These substantial GHG reductions have helped California reach its 2020 GHG targets four years ahead of schedule[14] and continue reducing emissions below the 2020 target[15], and they can play a similar role in meeting the 2030 and 2045 targets and beyond.

Biomass-based diesel has played a key role in the LCFS, providing nearly half (45%) of the LCFS carbon reductions over the last three years and 42% overall since 2011[16] (Fig. 2), more than renewable natural gas and electricity combined. These sustainable diesel replacements have grown from a mere 14 million gallons in 2011 to nearly 900 million gallons in 2020[17] (a 6100% growth), so that nearly a quarter (24%) of the diesel fuel pool now comprises biomass-based diesel. And that growth is expected to continue as California progresses toward its 20% carbon intensity reduction target in 2030. Indeed, the University of California at Davis has identified the need for up to 60-80% of the diesel fuel pool in California to be replaced by biomass-based diesel if California is to achieve its 2030 target[18] in the absence of deep electrification.

[13] Depending on the feedstocks used, BMBD have been scored in California with carbon intensity as low as 8-16. See CA LCFS certified "Current Fuel Pathways", accessed Oct. 31, 2020.
[14] California Air Resources Board press releases, https://ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levels-first-time, accessed Oct. 31, 2020.
[15] California Air Resources Board press release, https://ww2.arb.ca.gov/news/latest-state-greenhouse-gas-inventory-shows-emissions-continue-drop-below-2020-target,, accessed Sept. 1, 2021.
[16] CARB LCFS Dashboard, opt cit.
[17] Ibid.
[18] Bushnell et al. (Feb. 2020), "Uncertainty, Innovation, and Infrastructure Credits: Outlook for the Low Carbon Fuel Standard Through 2030," University of California Institute of Transportation Studies, at v.

Fig. 2 Biomass-based Diesel Provides the Bulk of Transportation Fuel Carbon Reductions



Source: LCFS Dashboard, 4/30/21, https://ww3.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm.

The growth in California of biomass-based diesel translates to displacement of more than 3.9 billion gallons of petroleum diesel since 2011. In other words, the use of biomass-based diesel has avoided adding to the atmosphere the anthropogenic carbon emissions resulting from nearly 4 billion gallons of displaced petroleum diesel since the LCFS started. The state can and should do more to incentivize even more displacement of petroleum diesel through the use of biomass-based diesel.

Immediate Reductions in Emissions Harmful to Public Health are Available through the Use of Drop-In Biofuels Now While the State Pursues Deep Electrification

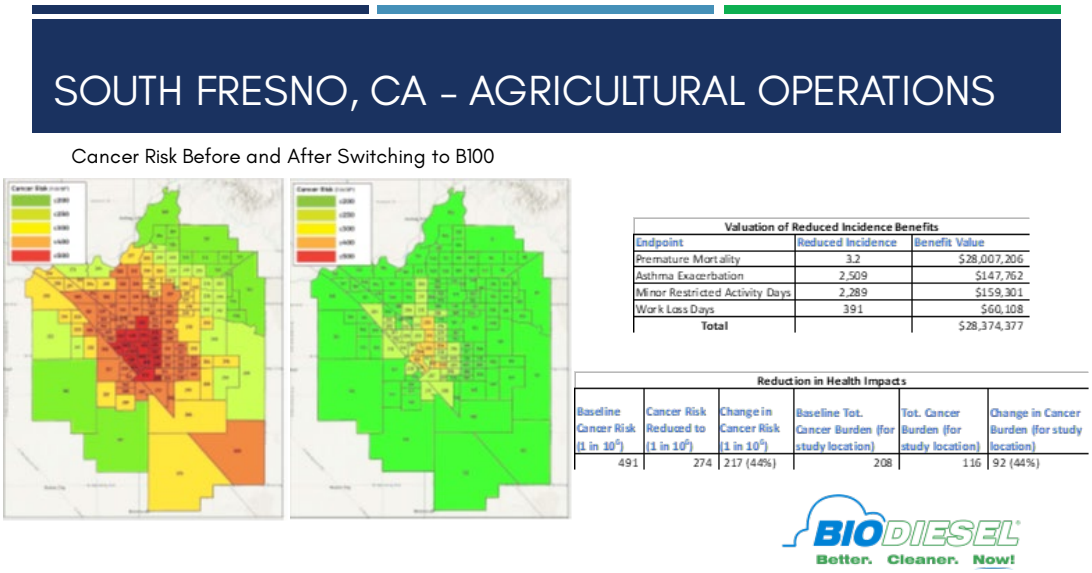
As noted, biomass-based diesel provides important and substantial carbon reductions now and will do so in the years to come. But just as important, these fuels reduce diesel particulate matter and other toxic emissions that are harmful to human health. Thus, NBB and CABA believe the maximum level of benefits from these fuels can and should be pursued by the state while California pursues widespread electrification. The use of biomass-based diesel in the state's existing fleet of legacy heavy duty vehicles provides an immediate improvement in the health of California's local communities. This has been shown by the groundbreaking Trinity Consultants study[19] recently commissioned by NBB. That study quantified the public health

[19] Available at: https://www.biodiesel.org/news-resources/health-benefits-study.

benefits at the neighborhood/census tract level of switching to biodiesel in 13 sites on both coasts and Colorado, including four in California, showing that such a switch would reduce or avoid:[20]

- 370 cancer cases (a 45% reduction in cancer risk, see Fig. 3 as an example)
- 230 premature deaths per year
- 150,000 asthma attacks per year
- 31,000 work loss days per year
- $2.0B health costs per year.

Fig. 3. Projected Cancer Risk Reduction and Other Health Benefits by Switching to Biodiesel



These benefits are especially important for disadvantaged and EJ communities, many of which are located at or near sites that still use high levels of petroleum diesel. At these sites, there are significant numbers of legacy vehicles that can benefit from the reduced DPM emissions which biomass-based diesel provides. These sustainable diesel replacements would benefit even the more modern, 2010 and newer engines by reducing their GHG emissions and particle loading of the diesel particulate filters, thereby improving their longevity and maintenance.

<u>Further Decarbonization through Expanded Use of Biomass-based Diesel</u>

NBB has been fully supportive of efforts to address climate change and has been a strong partner in California, Oregon, Washington and many other states that have developed or are

[20] Wilmington, Carson, West Long Beach near the Port of L.A./Long Beach; San Bernardino; South Fresno; and West Oakland.

developing programs to reduce climate impacts from the use of petroleum fuels. We applaud CARB's efforts to update the Scoping Plan to establish a roadmap toward the laudable goal of further reducing carbon and toxic air emissions. To this end, NBB has previously provided comments on the need to update the carbon scoring mechanism in the LCFS program to reflect the latest science, correct errors, and reflect learnings gained since the regulation was last amended in the 2015 and 2018 rulemakings[21]. We appreciate CARB's commitment to using the most robust and up-to-date science in the LCFS program and believe the updates outlined in our previous comments would make the program even more solidly grounded in the most up-to-date science.

Further, the Scoping Plan workshop on natural and working lands makes it clear the state will need to find ways to incentivize best practices that reduce carbon emissions in farming operations and further increase soil organic carbon. NBB believes its farmer members employ some of the most sustainable land management practices in the world. We strongly encourage CARB staff to work with NBB farmer members and others in this space, who have the expertise and experience to provide important insights that can inform California's efforts to reach carbon neutrality. We would be happy to collaborate with CARB staff and other agencies on ways to identify, quantify, and incentivize practices and technologies that improve carbon reduction and soil organic carbon, including providing a more direct market signal to farmers that encourage and expand such practices. Finally, we encourage CARB staff and other agencies to work with farmers and other land managers as the state develops methods to validate any changes in the level of soil organic carbon.

Conclusions

The biomass-based diesel industry, and more recently the growing sustainable aviation fuel sector, have been strong champions of California's efforts to address climate change. We applaud California's efforts to achieve carbon neutrality and, toward that end, believe CARB should continue strengthening the LCFS to achieve even greater carbon and air pollution reductions. Based on our analysis, we suggest that CARB conduct its Scoping Plan modeling with 3.4 billion gallons of biomass-based diesel in the 2030-2035 timeframe. We also strongly encourage CARB staff to update the LCFS to reflect the best available science, including direct observational data as we have previously requested. We appreciate the good working relationship we have developed with CARB over many years and look forward to working cooperatively and productively as you proceed with the Scoping Plan Update.

[21] See NBB's Nov. 11, 2020, comment letter on the next round of LCFS rulemaking, https://www.arb.ca.gov/lists/com-attach/120-lcfs-wkshp-oct20-ws-WjQCZgBjUV0FYFM8.pdf, incorporated herein by reference.

Adoption of these recommendations will help ensure that biomass-based 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,

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