

**Response To Comments**  
**on the**  
**Draft and Recirculated Environmental Impact Analyses**

**Prepared for the**  
**Amendments to the Low Carbon Fuel Standard**

**California Air Resources Board**  
**1001 I Street**  
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**to be considered at the**  
**November 8, 2024 Board Hearing**



## TABLE OF CONTENTS

|            |   |          |
|------------|---|----------|
| <b>1.0</b> | <b>Introduction.....</b>  | <b>1</b> |
|            | A. Requirements for Responses to Comments .....   | 1        |
|            | B. Comments Requiring Substantive Responses.....  | 4        |
| <b>2.0</b> | <b>Responses to Comments .....</b>  | <b>6</b> |
|            | A. Master Responses to the Draft and Recirculated Environmental<br>Impact Analyses.....               | 7        |
|            | B. 45 Day Comments and Responses on the Draft and Recirculated<br>Environmental Impact Analyses ..... | 30       |
|            | C. 15 Day Comments and Responses on the Draft and Recirculated<br>Environmental Impact Analyses.....  | 383      |

### Tables

|  |    |
|--|----|
| Table 2-1: List of Comment Letters Receiving Responses for CEQA Purposes ..... | 22 |
|--|----|

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## **Acronyms and Abbreviations**

|                 |                                      |
|-----------------|--------------------------------------|
| AAM             | Auto Acceleration Mechanism          |
| AB              | Assembly Bill                        |
| BACT            | Best Available Control Technology    |
| CARB or Board   | California Air Resources Board       |
| CCR             | California Code of Regulations       |
| CCS             | carbon capture and sequestration     |
| CEQA            | California Environmental Quality Act |
| CEC             | California Energy Commission         |
| DAC             | Direct Air Capture                   |
| EIA             | Environmental Impact Analysis        |
| EIR             | environmental impact report          |
| EPA             | U.S. Environmental Protection Agency |
| ERS             | USDA Economic Research Service       |
| EV              | electric vehicle                     |
| GHG             | greenhouse gas                       |
| GTAP            | Global Trade Analysis Project        |
| HRI             | Hydrogen Refueling Infrastructure    |
| ISOR            | Initial Statement of Reasons         |
| kWh             | kilowatt hour                        |
| LCFS            | Low Carbon Fuel Standard             |
| L-CNG           | Liquefied Compressed Natural Gas     |
| LUC             | Land Use Change                      |
| NO <sub>x</sub> | nitrogen oxide                       |

|                   |  |
|-------------------|--|
| PG&E              | Pacific Gas & Electric                                   |
| PM                | particulate matter                                       |
| PM <sub>2.5</sub> | particulate matter less than or equal to 2.5 micrometers |
| PRC               | Public Resources Code                                    |
| RFS               | Renewable Fuel Standard                                  |
| ROG               | reactive organic gases                                   |
| SB                | Senate Bill  |
| SO <sub>x</sub>   | oxides of sulfur   |
| US                | United States  |
| USDA              | United States Department of Agriculture                  |
| ZEV               | zero-emission vehicle                                    |

## 1.0 Introduction

The California Air Resources Board (CARB) released a Draft Environmental Impact Analysis (EIA) for the Low Carbon Fuel Standard Amendments, herein referred to as the Proposed Amendments (i.e., the proposed project under the California Environmental Quality Act [CEQA]) on January 5, 2024, for a 45-day public review and comment period that closed on February 20, 2024. CARB released a Recirculated Draft EIA (Recirculated EIA) on the Proposed Amendments on August 16, 2024, for a 45-day public review and comment period that closed on September 30, 2024. Staff released 15-day changes to the Proposed Amendments on August 12, 2024, and the comment period closed on August 27, 2024. Staff released second 15-day changes to the Proposed Amendments on October 1, 2024, and the comment period closed on October 16, 2024. CARB staff will present the Proposed Amendments to the Board on November 8, 2024, for consideration.

Written comment letters received on the Draft EIA are provided on CARB's website at [https://www.arb.ca.gov/lispub/comm/iframe\\_bccommlog.php?listname=lcfs2024&\\_ga=2.130304591.1968667090.1720651830-786432072.1706214030](https://www.arb.ca.gov/lispub/comm/iframe_bccommlog.php?listname=lcfs2024&_ga=2.130304591.1968667090.1720651830-786432072.1706214030).

Written comment letters received on the Recirculated EIA are provided on CARB's website at [https://www.arb.ca.gov/lispub/comm/iframe\\_bccommlog.php?listname=eiarecirc\\_lcfs2024&\\_ga=2.105537664.206312120.1730236893-344015696.1538150852](https://www.arb.ca.gov/lispub/comm/iframe_bccommlog.php?listname=eiarecirc_lcfs2024&_ga=2.105537664.206312120.1730236893-344015696.1538150852).

CARB staff carefully reviewed all comment letters received into the rulemaking record to determine which ones raised significant environmental issues related to the analysis in the Draft EIA and the Recirculated EIA. This document includes each of these comments, which are taken verbatim from the submitted comments letters and any typos, grammatical errors or footnote numbers are as they were submitted by the commenter, as well as CARB staff's written responses to that subset of comments. These comment responses will be provided to the Board for consideration prior to it taking final action on the Proposed Amendments, as amended through public input.

Although this document includes written responses only to those comments related to the Draft EIA and the Recirculated EIA, all other comments received will be responded to in the Final Statement of Reasons for the Proposed Amendments. The public hearing notice and related rulemaking materials (i.e., Staff Report, Statement of Reason, and EIAs) for the Proposed Amendments are provided on CARB's website at <https://ww2.arb.ca.gov/rulemaking/2024/lcfs2024>.

### A. Requirements for Responses to Comments

These written responses to public comments on the Draft EIA and the Recirculated EIA are prepared in accordance with CARB's certified regulatory program to comply with CEQA. CARB's certified regulations state, in pertinent part:

*California Code of Regulations, title 17, Section 60004.2(b)(3). Response to Public Comment*

*CARB shall evaluate comments on environmental issues received during the noticed comment period and shall respond as follows:*

- (A) Comments received during the noticed public comment period regarding environmental impacts that may result from the proposed project shall be considered, and a written response shall be prepared where required by section 15088 of title 14 of the California Code of Regulations.*
- (B) CARB may, but is not required to, respond to late comments made outside the noticed comment period.*
- (C) When responding to a comment raising significant environmental impacts from a public agency, a written proposed response shall be provided to that agency at least 10 days prior to certifying an Environmental Impact Analysis.*
- (D) The response to comment may be prepared in the form of (1) a revision to the draft Environmental Impact Analysis, (2) a separate section in or attachment to the Final Environmental Impact Analysis, or (3) a separate response to comments document.*
- (E) The response to comment shall include the following:*
  - 1. Comments and recommendations concerning significant environmental issues received during the noticed public review period on the draft Environmental Impact Analysis, either verbatim or in summary;*
  - 2. A list of persons, organizations, and public agencies commenting on the draft Environmental Impact Analysis during the noticed public review period; and*
  - 3. The responses to significant environmental issues raised during the noticed public review period.*

Public Resources Code (PRC) Section 21091 also provides guidance on reviewing and responding to public comments in compliance with CEQA. While this section refers to environmental impact reports, proposed negative declarations, and mitigated negative declarations, rather than an EIA, it contains useful guidance for preparing a thorough and meaningful response to comments.



PRC Section 21091, subdivision (d) states:

*(1) The lead agency shall consider comments it receives if those comments are received within the public review period.*

*(2) (A) With respect to the consideration of comments received, the lead agency shall evaluate any comments on environmental issues that are received from persons who have reviewed the draft and shall prepare a written response pursuant to subparagraph (B). The lead agency may also respond to comments that are received after the close of the public review period.*

*(B) The written response shall describe the disposition of each significant environmental issue that is raised by commenters. The responses shall be prepared consistent with section 15088 of Title 14 of the California Code of Regulations.*

Section 15088 of Title 14<sup>1</sup> of the California Code of Regulations (CCR) also includes useful information and guidance for preparing a thorough and meaningful response to comments. It states, in relevant part, that specific comments and suggestions about the environmental analysis that are at variance from the lead agency's position must be addressed in detail, along with reasons why specific comments and suggestions were not accepted. Responses must reflect a good faith, reasoned analysis of the comments.

Title 14 CCR Section 15088 (a–c) states:

*(a) The lead agency shall evaluate comments on environmental issues received from persons who reviewed the draft EIR and shall prepare a written response. The Lead Agency shall respond to comments received during the noticed comment period and any extensions and may respond to late comments.*

*(b) The lead agency shall provide a written proposed response to a public agency on comments made by that public agency at least 10 days prior to certifying an environmental impact report.*

*(c) The written response shall describe the disposition of significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections). In particular, the major environmental issues raised when the Lead Agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted. There must be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice.*

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<sup>1</sup> The Title 14 regulations relating to CEQA are also known as the "CEQA Guidelines".

## **B. Comments Requiring Substantive Responses**

In compliance with CEQA, CARB has prepared written responses to those comments that raise “significant environmental issues” associated with the proposed action, as outlined in Title 17 CCR Section 60004.2(b)(3)(E). A total of 407 comment letters were submitted electronically on or before February 20, 2024, to the comment docket set up for the Proposed Amendments and its appendices, including the Draft EIA. Out of the 408 total comments received, 117 comment letters were determined to include comments raising significant environmental issues related to the Draft EIA and requiring a written response under CARB’s certified regulatory program and CEQA. CARB staff was conservative and inclusive in determining which comments warranted a written response and even included comments that did not mention the environmental analysis included in the Draft EIA but did raise an issue related to potential adverse impacts related to the Proposed Amendments. In addition, a total of 23 comment letters were submitted electronically on or before September 30, 2024, to the comment docket set up for the Recirculated EIA for the Proposed Amendments. Since this comment docket was specifically for the Recirculated EIA written responses to all of the comments submitted to this docket are included in this document even if they were determined to not include comments raising significant environmental issues related to the Recirculated EIA.

A total of 253 comment letters were submitted electronically on or before August 27, 2024, to the first 15 day comment docket. Out of the total 253 comments received, 67 comment letters were determined to include comments raising significant environmental issues related to the EIA. Additionally, a total of 307 comment letters were submitted electronically on or before October 16, 2024, to the second 15 day comment docket. Out of the total 307 comments received, 14 comment letters were determined to include comments raising significant environmental issues related to the EIA. While not required, since these comments were received outside a formal CEQA comment period for the Draft EIA or Recirculated EIA, CARB has provided written response to these comments for transparency.

CARB acknowledges that a majority of the comments received were related to the Proposed Amendments and do not raise an issue related to the EIA. The EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments’ potentially significant physical impacts on the environment. As such, comments related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, these comments are acknowledged for the record and have been reviewed by CARB staff prior to returning to the Board for final consideration.

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## **2.0 Responses to Comments**

The comment letters responded to in this document were coded by the order in which they were received and consistent with the comment docket opened for the Proposed Amendments.

Table 2-1 provides the list of comment letters that contain substantive environmental comments received during the 45-day comment period on the Draft EIA as well as all of the comments received during the 45-day comment period on the Recirculated EIA. Table 2-2 provides the list of comment letters that contain substantive environmental comments received during both of the 15-day comment periods on the Proposed Amendments.

This document provides responses to the comments that CARB staff determined raise significant environmental issues related to the Draft EIA and the Recirculated EIA and require a response under CARB's certified regulatory program and CEQA. As previously explained, CARB staff was conservative and inclusive in determining which comments warranted a written response and even included comments that did not mention the environmental analysis included in the Draft EIA and the Recirculated EIA but did raise an issue related to potential adverse impacts related to the Proposed Amendments. Verbatim excerpts of the comments and responses to these comments are provided below.

In addition to the environmental comments addressed in this document, CARB staff will be responding to all other comments received to date, including those received at the Board Hearing, in the Final Statement of Reasons. All comments received during the two 45-day comment periods and subsequent 15-day comment periods are part of the rulemaking record and were provided to Board members for their full consideration before acting on the Proposed Amendments, which will be considered during the November 8, 2024, Board Hearing.

## **A. Master Responses to the Draft and Recirculated Environmental Impact Analyses**

The following Master Responses address recurring themes on the Draft EIA and Recirculated EIA (EIA) within the comments listed in Table 2-1 and Table 2-2. Master Responses are also cross-referenced within the individual responses, where applicable.

### **1. Master Response 1: Increases in Livestock Production and Avoided Methane Crediting**

#### **Comment:**

CARB received numerous comments about the potential for herd size increases at large-scale livestock operations in response to the Proposed Amendments and the associated adverse environmental impacts of the increase in size of these farms. These comments also express concern related to avoided methane crediting under the Proposed Amendments, including concerns that avoided methane crediting contributes to emissions that exacerbate climate change.

#### **Response:**

An increase in livestock operations is not considered a compliance response related to the Proposed Amendments. Therefore, the EIA appropriately does not analyze potential adverse environmental impacts associated with an increase in livestock operations. CARB staff provided further explanation of this topic on pages 25 through 30 of the Recirculated EIA, stating that an increase in livestock operations would not be considered a reasonably foreseeable compliance response to the Proposed Amendments because it is too speculative given historical data and the complex economic, geographic, and legal considerations impacting livestock operator business decisions. Moreover, proposed changes to biomethane crediting in the Proposed Amendments, when compared to the existing regulation, reduce the long-term incentives provided for biomethane combustion in the LCFS.

As explained on pages 25-28 of the Recirculated Draft EIA, average dairy cattle herd sizes have been increasing for decades due to improved economics for larger dairies. At the same time, the total population of milk cows in California has declined since 2007, according to the United States Department of Agriculture (USDA) Census of Agriculture. The USDA Economic Research Service (ERS) has extensively analyzed consolidation and found that farms with larger herd size classes consistently earned substantially higher net returns on milk produced than smaller herds.<sup>1</sup> As explained on page 27 of the Recirculated EIA, larger herd sizes, coupled with adoption of technologies to improve production efficiency, result in improved

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<sup>1</sup> MacDonald, James M., Jonathan Law, and Roberto Mosheim. Consolidation in U.S. Dairy Farming, ERR-274, July 2020. <https://www.ers.usda.gov/webdocs/publications/98901/err-274.pdf>. Net returns are essentially the difference between production costs and prices paid to producers. Production costs include costs paid by producers for feed, fuel, labor, veterinary services, and regulatory compliance, and can also be affected by broader economic conditions (e.g., inflation, interest rates, and economic uncertainty).

financial returns per unit of milk produced for facilities achieving greater economies of scale, even at reduced commodity prices paid to producers. Larger herd sizes reduce the economic impact of production costs—including costs for animal feed, fuel, labor, technology adoption, environmental compliance, and commodity marketing—by spreading these costs across more animal units. These economic factors, and not actions taken in response to the LCFS, appear to drive decisions to consolidate or expand.

As explained in the Recirculated EIA, CARB staff have also extensively analyzed data from California dairies and concluded that the average dairy herd size has grown steadily before and after LCFS began to recognize avoided methane benefits in 2017, and there is no statistically significant relationship between the installation of digesters and dairy growth rates. CARB staff compiled and made publicly available the California Dairy & Livestock Database (CADD), the most comprehensive set of facility-level cattle herd data and digester information available for the State's dairy operations from 2012 to 2022.<sup>2</sup> Consistent with USDA Census data, the data compiled by CARB confirms the trend of increasing average herd sizes as the industry has shifted to fewer, larger farms. CARB's data synthesis and analysis, which was posted publicly in August 2024,<sup>3</sup> showed that the average annual growth rate of similar-sized dairies, with and without digesters, have a similar growth rate. In other words, it did not show a statistically significant correlation between the installation of a digester and an increase in dairy herd size.

In addition to the lack of a statistical correlation, there is insufficient evidence to support the claim that digester installations are causing increasing herd size. It is well-recognized that larger farms predominantly utilize liquid manure management (i.e., flush manure from animal housing into open lagoons).<sup>4,5</sup> Pursuant to section 95488.9(f)(1) of the LCFS regulation (title 17, CCR), LCFS crediting opportunities are limited to those facilities that otherwise utilized an open lagoon, such that the use of a digester captures significant methane emissions. Based on data in CADD, more than half of dairies with 2,500 mature cows have a digester. The fact that larger facilities are more likely to utilize a digester does not mean that the digester, or associated crediting opportunities, lead the operator to become a large facility. Given the long-standing historical trend toward consolidation, it is speculative to suggest such a cause-and-effect relationship. The comparison of growth rates among similar-sized facilities with and

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<sup>2</sup> California Air Resources Board, California Dairy & Livestock Database (CADD)  
<https://ww2.arb.ca.gov/resources/documents/california-dairy-livestock-database-cadd>

<sup>3</sup> California Air Resources Board, August 22, 2024, California Dairy Sector Workshop, Staff presentation, <https://ww2.arb.ca.gov/our-work/programs/slcpr/meetings> (Accessed August 12, 2024).

<sup>4</sup> Niles, M. T., & Wiltshire, S. (2019). Tradeoffs in US dairy manure greenhouse gas emissions, productivity, climate, and manure management strategies. *Environmental Research Communications*, 1(7), 075003.  
<https://doi.org/10.1088/2515-7620/ab2dec>

<sup>5</sup> Aguirre-Villegas, H. A., & Larson, R. A. (2017). Evaluating greenhouse gas emissions from dairy manure management practices using survey data and lifecycle tools. *Journal of Cleaner Production*, 143, 169-179.  
<https://doi.org/10.1016/j.jclepro.2016.12.133>

without digesters presented by staff implies that rates of expansion would be similar in the absence of digester incentives.

The data also confirms previous analysis that shows overall decreasing statewide dairy cattle population numbers. This means that, in aggregate, environmental impacts associated with dairy operations are expected to decrease provided that historical trends continue. Impacts of any new or expanding facility are appropriately evaluated on a site-specific basis where the location, scale, and other critical information are known, and the actual impacts of the project can be assessed. The Recirculated DEIA appropriately evaluates and discloses the programmatic impacts of this and other reasonably foreseeable compliance responses. Though the dairy sector has exhibited a trend of consolidating, whether, and, if so, how, a dairy operation would expand or a new dairy operation would be developed is speculative because it is subject to a fact-intensive, complex economic determination based on economic factors discussed above and relying upon local, unforeseeable circumstances. Evaluating the potential for the Proposed Amendments to cause future herd size expansion is infeasible, as it would require making multiple speculative inferences without historical or factual basis about what changes in the economic, regulatory, and operating landscape could lead to a change in a dairy's operation, which would require data about future decision-making by business owners that is capable of being differentiated and isolated. Therefore, any statewide animal population changes, facility herd expansions, or new dairy cattle facilities are expected to be the result of the above-described longstanding economic trends throughout North America or other factors and are not expected to be reasonably foreseeable compliance responses to the Proposed Amendments.

The Draft EIA and the Recirculated EIA rigorously evaluate the significant adverse impacts of the reasonably foreseeable compliance responses that could result from the implementation of the Proposed Amendments. Topics that are not considered a compliance response are not considered to be a result of the Proposed Amendments and are not required by CEQA to be analyzed in the EIA. For the reasons discussed above, livestock herd size expansion is not considered a compliance response to the Proposed Amendments and is appropriately not discussed as a foreseeable compliance response in the EIA.

Several comments, as explained further below, also raised concerns that avoided methane crediting for biomethane captured from livestock manure may lead to additional greenhouse gas emissions and prevent the state from meeting its climate goals. However, as explained on pages 29 to 30 in the Initial Statement of Reasons, capturing methane from California's methane sources (including, landfills, dairies, and wastewater) is critical for achieving the state's 2030 methane reduction and 2045 greenhouse gas reduction targets. California's comprehensive AB 32<sup>6</sup> GHG Emissions Inventory<sup>7</sup> shows that by 2022 the State has reduced greenhouse gas emissions from the dairy and livestock sector by nearly 3 million MTCO<sub>2</sub>e, or approximately 12.6% from 2012 levels, with the reductions coming primarily from the installation and operation of dairy digesters. In addition, CARB conducted comprehensive

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<sup>6</sup> Assembly Bill (AB) 32 (Nuñez and Pavley, Chapter 488, Statutes of 2006).

<sup>7</sup> [California Greenhouse Gas Emissions from 2000 to 2022: Trends of Emissions and Other Indicators](#)

statewide emissions modeling for the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan Update),<sup>8</sup> which identified utilizing digesters for continued reductions of methane emission from the dairy and livestock sector as a key strategy to achieve the State's 2030 and 2045 GHG emission reduction goals.

As described on Page 5 of the Draft EIA, California's 2022 Scoping Plan Update provides the framework for the State to achieve its carbon neutrality targets through continuation of existing measures implemented under SB 32 and through the development of new strategies. In addition to increasing the reduction of methane emissions by 2030 via the deployment of dairy digesters, the 2022 Scoping Plan Update identifies developing more stringent LCFS targets as one of the primary measures for achieving the State's GHG 2045 target of carbon neutrality. To meet those goals, CARB staff developed the Proposed Amendments, which would continue to support the capture of methane emissions via the deployment of dairy digesters within the context of other proposed improvements to the LCFS program's overall effectiveness, and California's associated long-term ability to support the consumption of increasingly lower-CI fuels.

Staff has also proposed several changes to biomethane crediting under the LCFS program in the Proposed Amendments which, when compared to the existing regulation, reduce the long-term incentives provided for biomethane combustion in the LCFS. For projects that break ground after December 31, 2029, staff is proposing to phase out pathways for crediting biomethane used in CNG vehicles after December 31, 2040. Pathways for biomethane used to produce renewable hydrogen would be eligible to receive credits until December 31, 2045. This concept aligns with the overall transition to non-combustion transportation technology called for in the 2022 Scoping Plan Update, as well as the shifting of biomethane resources to hydrogen production. In addition, to strengthen the nexus needed for LCFS crediting between reported fuels supplied to California and methane reductions occurring in California and to align with treatment of other fuels in the program, staff has proposed to introduce deliverability requirements for biomethane used in transportation.

Additionally, commenters expressed concerns that the herd size increases at some facilities would increase methane emissions from enteric fermentation; however, cattle enteric emissions have decreased as the total statewide dairy population has declined steadily since 2012 as shown in the figure below (based on the AB 32 GHG Emissions Inventory, which relies on livestock population data from the USDA Census of Agriculture). Likewise, commenters have expressed concerns that methane emissions from digestate management may increase as a result of the increasing use of digesters. However, as specified by the LCFS regulation,<sup>9</sup> digester projects are only eligible for avoided methane crediting under the LCFS if

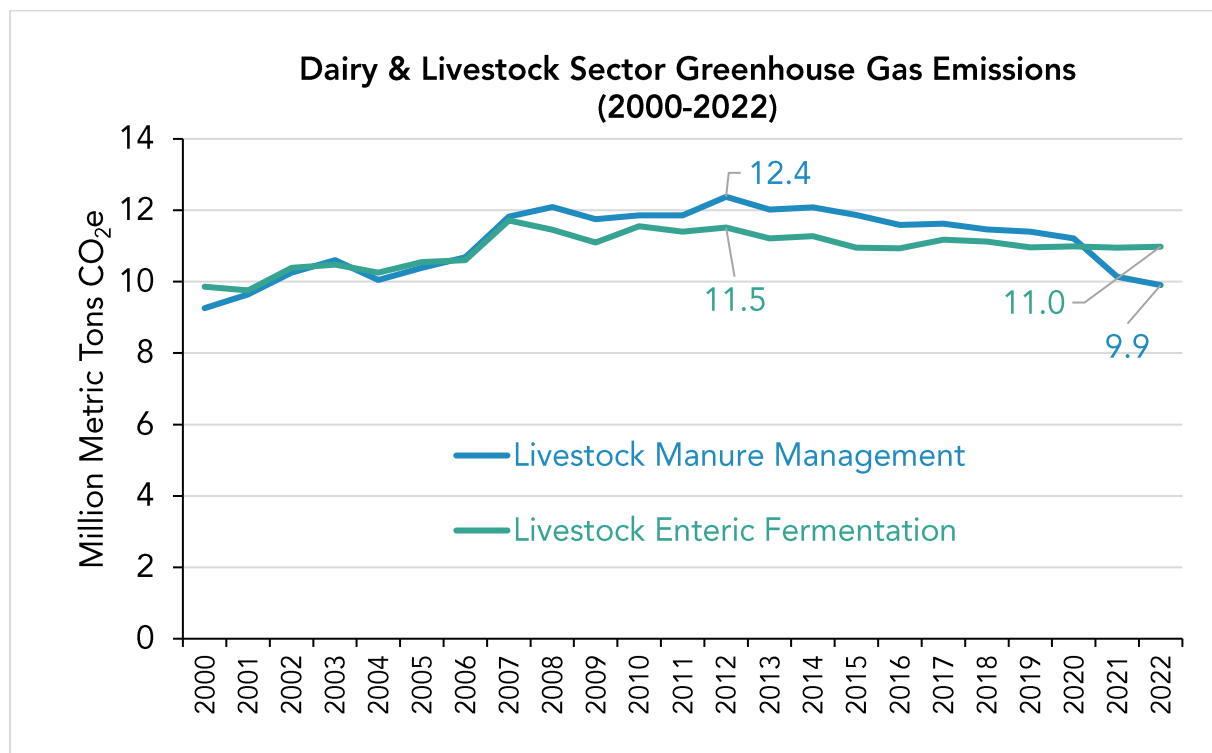
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<sup>8</sup> <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>

<sup>9</sup> Cal. Code Regs., tit. 17, § 95488.9(f)(1) (the Proposed Amendments do not propose any amendment to this subsection) reads in full:



an open anaerobic lagoon manure management system was previously used. The “digestate” or effluent exiting an anaerobic lagoon or digester are expected to be materially similar, and are typically managed in the same way at a given facility before and after the addition of a cover (e.g., applied to land or composted for use as bedding). In other words, applying a cover to the anaerobic system to capture methane emissions does not mean that more digestate is produced. In response to concerns that land application of digested manure could lead to changes in emissions, CARB has sponsored multiple research studies to improve our current understanding of nitrogenous emissions, including oxides of nitrogen, nitrous oxide, and ammonia from soils in California.<sup>10</sup>



The Proposed Amendments would not encourage expanding production of methane or uncontrolled biogas; rather, the Proposed Amendments would incentivize the construction of infrastructure needed to collect biogas to prevent methane emissions. The Proposed

“A fuel pathway that utilizes biomethane from dairy cattle or swine manure digestion may be certified with a CI that reflects the reduction of greenhouse gas emissions achieved by the voluntary capture of methane, provided that:

(A) A biogas control system, or digester, is used to capture biomethane from manure management on dairy cattle and swine farms that would otherwise be vented to the atmosphere as a result of livestock operations from those farms.

(B) The baseline quantity of avoided methane reflected in the CI calculation is additional to any legal requirement for the capture and destruction of biomethane.”

<sup>10</sup> Soil Nitrogenous Emissions "Subject Matter Expert Review Panel" Contract 23RD017

[https://ww2.arb.ca.gov/sites/default/files/classic/eiareasource/Soil\\_Nitrogenous\\_Emissions\\_SMERP\\_Kickoff.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/eiareasource/Soil_Nitrogenous_Emissions_SMERP_Kickoff.pdf)

Amendments aim to capture biogas from dairy and swine facilities, food processing, and other organic waste management facilities that is otherwise released to the environment. Capturing biogas reduces the climate impacts of fugitive methane emissions. This recovered methane from biogas can then provide energy for electricity, heating, or transportation fuel.

## **2. Master Response 2: Land Use Changes and Deforestation Due to Feedstock Changes**

### **Comment:**

Several commenters stated that the Proposed Amendments would result in the loss of forestry resources and working lands due to agricultural activity to generate low-CI fuels.

### **Response:**

Specified LCFS carbon intensity (CI) values for land use changes incentivize the production and use of low-carbon sources, such as waste-derived biofuels, and are designed to decrease the potential for deforestation and other conversion of lands not currently in agricultural production. As discussed on page 69 of the Draft EIA, waste-derived biofuels are assigned “zero” land use change (LUC) values because they use waste biomass material from existing agricultural, industrial (e.g., food processing) operations and commercial/residential waste management (i.e., no attendant deforestation or other land conversion).

As discussed on page 20 of the Draft EIA, to reduce the risk that rapid expansion of biofuel production and biofuel feedstock demand could result in deforestation or adverse land use change, CARB staff are proposing additional guardrails on the use of crop-based feedstocks for biofuel production. Specifically, CARB staff are proposing to require pathway holders to acquire independent feedstock certification to ensure feedstocks are not contributing to impacts on other carbon stocks like working/agricultural lands and forests. CARB staff are also proposing to remove palm-derived fuels from eligibility for credit generation, given palm oil has been demonstrated to have the highest risk of being sourced from deforested areas. Palm-derived fuel transactions have not been reported under the program or received any credits to date.

In addition to these regulatory proposals, the Proposed Amendments are also proposing changes to eligibility of biomass-based diesel fuel pathways which also act as guardrails against potential land conversion for crop-based biofuels. As described on pages 15-16 of the Recirculated EIA, staff propose that CARB would stop accepting new biomass-based diesel LCFS fuel pathway applications starting on January 1, 2031, contingent on successful implementation of California’s medium- and heavy-duty (MHD) zero emission vehicle regulations. Staff is also proposing to limit crediting for biomass-based diesel produced from virgin soybean oil, canola oil, and sunflower oil for up to 20 percent of annual biomass-based diesel reported on a company-wide basis. Quantities of soybean, canola, or sunflower oil biomass-based diesel reported in excess of 20 percent would not generate credits. The proposed addition avoids sending a long-term signal for virgin soy, canola, or sunflower oil to

serve California demand, which serves as a guardrail against potential future land conversion or deforestation.

The 20 percent crediting provision does not cap the volume of fuels produced from soy, canola or sunflower oil that may be used in California, as some have suggested. It does not establish a volumetric limit on such fuels, but instead establishes a threshold above which fuels produced from these feedstocks will neither generate credits nor deficits. In addition, this threshold is a floating value that is tied to the total biomass-based diesel reported per company, and therefore leaves room for companies to increase total reported volumes of biomass-based diesel from these feedstocks and generate credits below the 20% threshold value. The 20 percent value is based on historical reported data under the LCFS program and is approximately equivalent to the proportion of the biomass-based diesel pool that was based on soy, canola, and sunflower oil feedstocks, reported in Q1-Q4 2023. Some commenters claim that staff modeling and messaging released for the Staff Report and April 2024 LCFS workshop<sup>11</sup> suggest that the soy/canola/sunflower oil provision would increase consumption of fossil diesel, but this is speculative and the Proposed Amendments are structured to avoid this outcome. Alternative 1 of the Staff Report included a hard volumetric cap on biomass-based diesel regardless of feedstock, at a level far below the existing biomass-based diesel consumption, and therefore resulted in increased fossil diesel consumption. At the April Workshop, staff similarly presented results from the EJAC scenario modeled for the ISOR, which also included a hard cap on biomass-based diesel volumes. Alternative 1 and the EJAC Scenario differed significantly from the provision proposed by Staff, which (as noted above) is not a volumetric cap, allows for growth in credited quantities, and was based on more current consumption of the affected feedstocks. Staff disagrees with the assertion that the soy/canola/sunflower oil provision would increase consumption of fossil diesel in California, with the associated negative air quality impacts and increased GHG emissions.

Some stakeholders raised concerns that the Proposed Amendments would allow for shuffling of feedstocks and indirectly contribute to land use change. The Proposed Amendments are not expected to exacerbate land use change and are designed to have the opposite effect. The existing regulation and Proposed Amendments cannot prevent high-risk feedstocks from being diverted elsewhere as a result of feedstock flows across global industries. However, the various protective provisions included in the Proposed Amendments send market signals for fuel suppliers to California to move away from feedstocks with potential negative externalities such as land conversion or deforestation, and are consistent with similar policies being implemented within other national biofuels programs (e.g., in the EU, Canada, Brazil, and the US) to reduce global risks of biofuels feedstocks contributing to land use change.

Lastly, staff is proposing to add specification of the geographic regions listed in Table 6 of the current regulation, identifying where land use change (LUC) carbon intensity was modeled for specific feedstock/fuel combinations. Table 6 LUC values were estimated through the Global Trade Analysis Project (GTAP) and Agro-Ecological Zone Emissions Factor (AEZ-EF) modeling framework developed by CARB with input from an expert working group in 2010 and

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<sup>11</sup> <https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-meetings-and-workshops>.

were updated during CARB's re-adoption of the LCFS regulation in 2015. GTAP uses economic and trade data to model the land requirements—i.e., the amount of forest, pasture, and cropland converted—to meet an increase in biofuel demand. It estimates these market-mediated land conversions within a focal region (i.e., domestic LUC) and elsewhere (i.e., world-wide LUC), which are used as inputs for the AEZ-EF model to estimate the associated GHG emissions based on regional carbon stocks. LUC carbon intensity for feedstocks from regions other than the regions modeled may not be equivalent with the Table 6 values for those feedstocks shown. The LUC carbon intensity of a given crop feedstock may vary based on land use practices and local carbon stocks in the region where it is produced.

To reflect this variability, the Proposed Amendments incorporate a mechanism to assign more conservative LUC carbon intensity values to feedstock/fuel combinations from regions that were not analyzed as part of the previous development of the existing Table 6 values. This proposal is informed by the increasing number of fuel pathway applications CARB has received involving crop-based feedstocks from regions other than those previously modeled in 2015. Staff's proposal aims to provide more granularity to LUC carbon intensity values and to provide a mechanism for staff to assign a more conservative LUC value for fuel/feedstock combinations that may pose greater deforestation or other LUC risks. For feedstock/fuel combinations from regions not listed in the updated Table 6, staff proposes that CARB may conduct an empirical assessment to determine a conservative LUC value based on historical land conversions for a given feedstock. The empirical/regional LUC carbon intensity of a given feedstock/fuel combination will be compared to its respective modeled/global LUC carbon intensity value in Table 6, and the more conservative value will be assigned, as regional LUC is a subset of total LUC. With this amendment concept, the Proposed Amendments would reduce risks of deforestation and land-use change from LCFS implementation.

A wholesale update to land use change emissions quantification, which might include assessment of waste/residue-based fuels produced from used cooking oil, tallow and distillers corn oil, was not included within the scope of the Proposed Amendments. Estimates of land use change emissions associated with crop-based biofuels range above and below the existing land use change values in Table 6 of the LCFS regulation, and staff has not observed a consensus in the scientific community or research on this topic. Some stakeholders have produced research highlighting what they consider to be deficiencies in the existing land use change assessment used for LCFS, but disagree sharply on the directional impact on carbon intensity of these deficiencies. As a result of this lack of consensus and the time- and resource-intensive process that would be necessary to pursue a comprehensive reevaluation of land use change modeling (the previous effort required a multi-year process with a working group convened from industry, academia, non-profits and more), staff did not propose changes to the values in Table 6. Accordingly, comments requesting specific updates to these values or pointing out suggested deficiencies in the land use change modeling framework are considered beyond the scope of this rulemaking.

In total, CARB staff included a suite of Proposed Amendments to reduce the risk of future carbon-loss and/or GHG emissions from biofuel feedstock production, which include: (1) third-party sustainability certification, (2) a 20% crop oil feedstock crediting limit, (3) potential

prohibition on future biomass-based diesel fuel pathway application acceptance, and (4) LUC assessments for novel fuel/feedstock combinations. The aggregate effect of this suite of regulatory proposals is expected to send the market signals necessary to encourage growth of sustainable, low-carbon feedstocks to displace fossil fuels in California, while minimizing potential negative externalities such as land conversion or deforestation and their associated environmental impacts.

### **3. Master Response 3: Out-of-state Impacts**

#### **Comment:**

Numerous comments asserted that potential out-of-state impacts could result from the Proposed Amendments, and that the EIA should have disclosed these claimed impacts. These claimed impacts include shifting the location of pollution and general adverse environmental impacts out-of-state.

#### **Response:**

Some commenters asserted that the EIA did not analyze out-of-state impacts or failed to analyze out-of-state impacts specifically. While CEQA does not specifically require lead agencies to analyze out-of-state impacts, out-of-state impacts were an integral part of the EIA's programmatic review of the Proposed Amendments and analyzed to the extent feasible and not speculative.

The environmental analysis for broad, statewide programs like the Proposed Amendments will appropriately not be as detailed as it may be for specific projects (CEQA Guidelines, § 15146). Because the EIA addresses a broad regulatory program, a more programmatic, general level of detail is appropriate. However, the EIA made a rigorous effort to evaluate significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses that could result from implementation of the Proposed Amendments. To achieve this, as provided in Chapter 1.0., Section B., the EIA "addresses environmental impacts within California and outside the state to the extent they are reasonably foreseeable and do not require speculation." The significant environmental impacts analyzed and disclosed in the resource areas of the EIA may apply not just to the state of California, but also to out-of-state resources as well. It is therefore reasonably foreseeable that in certain instances, the Proposed Amendments may cause impacts out-of-state, as the project description and further information provided by the Initial Statement of Reasons (ISOR) discloses. CARB disclosed many potential out-of-state compliance responses in Chapter 2.0, Section E, which are further explained in the ISOR. The EIA identifies and analyzes potentially significant impacts to those out-of-state resources to the extent they are reasonably foreseeable. For example, out-of-state dairy facilities already participate in the LCFS program, as disclosed in the ISOR, so the reasonably foreseeable impacts discussed in the EIA related to dairy facilities would generally apply to out-of-state as well as in-state facilities.

However, for the Proposed Amendments, the level of detail of impact analysis is necessarily and appropriately general because the Proposed Amendments are programmatic. CEQA does not require evaluation of speculative impacts (CEQA Guidelines, § 15145). An environmental document is not required to speculate about the environmental consequences of future developments that are unspecified or uncertain, or where the design and siting details have not yet been established. The analysis is based on reasonably foreseeable compliance responses, which in turn are based on a set of reasonable assumptions. While the compliance responses described in the EIA are not the only conceivable ones, they are the reasonably foreseeable ones; thus, they provide a credible basis for impact conclusions that are consistent with available evidence. The Proposed Amendments' reasonably foreseeable compliance responses are analyzed in a programmatic manner for several reasons: (1) any individual action or activity would be carried out under the same program; (2) the reasonably foreseeable compliance responses would result in generally similar environmental effects that can be mitigated in similar ways (CEQA Guidelines, § 15168(a)(4)); and (3) while the types of foreseeable compliance responses can be reasonably predicted, the specific location, design, and setting of the potential actions are unknown at this time.

Some comments raised concerns about environmental impacts from facilities outside of the state of California violating local, state, or federal law. The EIA generally does not analyze site specific impacts when determinations regarding the location of future facilities or other infrastructure would be speculative. Any new or modified facilities, no matter their size and location, would be required to seek local or state land use approvals prior to their development. Part of the land use entitlement process for new or modified facilities in California requires that each of these projects undergo any necessary environmental review consistent with the requirements of CEQA and the CEQA Guidelines. It is assumed that facilities proposed in other states would be subject to comparable federal, state, and/or local planning, land use and environmental review requirements, and that the environmental review process would assess whether adequate utilities and services (i.e., wastewater services, water supply services, solid waste facilities) would be available and whether the project would result in the need to expand or construct new facilities to serve the project. It is assumed that several of the mitigation measures described in the Draft EIA would be required regardless of where the facility is located. The environmental review process and utility and service demands would be calculated; agencies would provide input on available service capacity and the potential need for service-related infrastructure, including expansions to wastewater treatment plants, new water supply entitlements and infrastructure, stormwater infrastructure, and solid waste handling capacity (e.g., landfills). The resulting environmental impacts would also be determined through this process.

Furthermore, CEQA is clear that an indirect impact should be considered only if it is a reasonably foreseeable impact caused by the project. (CEQA Guidelines, §§15064(d)(3), 15358(a)(2).) An environmental impact that is speculative or unlikely to occur is not reasonably foreseeable. (CEQA Guidelines, § 15064(d)(3).) Attempting to predict decisions by entities regarding the specific location and design of infrastructure undertaken by other entities, which involves extensive decision-making processes in response to the implementation of the Proposed Amendments, is speculative given the influence of other business and market

considerations in those decisions. As described above, specific actions undertaken to implement the Proposed Amendments would undergo project-level environmental review and compliance processes as required at the time they are proposed.

#### **4. Master Response 4: Air and Water Pollution**

##### **Comment:**

Some commenters expressed concerns that the Proposed Amendments would result in potential adverse environmental effects to water quality and increased air pollution, including concerns with combustion related impacts, particulate matter, impacts of biofuels, ammonia emissions, public health risks, increased toxic air and water pollution, groundwater and surface water contamination, pollution from agricultural related operations, and increased water usage.

##### **Response:**

The EIA makes a good-faith effort to disclose the potentially adverse environmental impacts related to the implementation of the Proposed Amendments consistent with Section 15002(g) of the State CEQA Guidelines (Tit. 14, CCR). The EIA analysis analyzes and discloses potential impacts, while avoiding mere speculation as specified by CEQA. The EIA concluded that the Proposed Amendments would result in potentially significant and unavoidable impacts to water quality and air quality. These determinations are summarized below.

As identified in Section 10 of Chapter 4.0 of the Draft EIA, reasonably foreseeable compliance responses associated with the Proposed Amendments could result in changes to the existing physical environment, including water quality. Pages 99-107 of the Draft EIA summarizes potential short-term construction-related and long-term operational-related effects to water supply. The Draft EIA also included recommended mitigation measures for the applicable lead agency to adopt and implement to reduce or avoid these impacts. For example, Mitigation Measure 10-1 would require that, as part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid off-site groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions.

Additionally, improperly managed activities from working farms and ranches can affect water quality. Agricultural nonpoint source pollution affects the water quality of rivers, lakes, and wetlands and contributes to the contamination of estuaries and groundwater. Agricultural activities that cause nonpoint source pollution include poorly located or managed animal feeding operations; overgrazing; plowing too often or at the wrong time; and improper, excessive, or poorly timed application of pesticides, irrigation water, and fertilizer. Pollutants resulting from farming and ranching include sediment, nutrients, pathogens, pesticides, metals,

and salts. Using management practices adapted to local conditions can minimize impacts from agricultural activities on surface water and groundwater.

The Regulatory Setting in Attachment A to the EIA includes applicable laws and regulations regarding hydrology and water quality. CARB does not have the authority to require the implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or state land use approval and/or permitting authority. New or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action undertaken as a compliance response to the Proposed Amendments is the Lead Agency with jurisdiction over that action, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation measures would be identified during the environmental review by agencies with project-approval authority. The recognized practices identified in Mitigation Measure 10-1 are routinely required to avoid and/or mitigate hydrology and water quality-related impacts.

In summary, because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with the EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce significant impacts. Although unlikely after the implementation of Mitigation Measure 10-1, it is possible that significant impacts on hydrology and water quality could still occur.

Staff conducted an extensive air impacts analysis and disclosed the materials providing the underlying assumptions in the air quality analysis as part of the Recirculated EIA. The methodology for the air quality analysis conducted in support of this rulemaking is detailed in Attachment C-1 of the Staff Report, and the underlying air quality analysis workbooks from the Staff Report and the first 15-day modifications to the proposed amendments are posted on the Supplemental 2023/2024 LCFS Modeling Documentation webpage with extensive details.

Section 3.0 of the Recirculated EIA includes an analysis of the short-term construction-related and operational-related air quality impacts associated with the implementation of the Proposed Amendments. As noted in the Recirculated EIA, at this time, the specific location, type, and number of construction activities are not known and would be dependent upon a variety of factors that are not within the control or authority of CARB and not within its purview. Thus, CARB has not quantified the potential construction-related emission impacts as these would be too speculative to provide a meaningful evaluation. Nonetheless, the analysis presented in the Recirculated EIA provides a good-faith disclosure of the general types of construction emission impacts that could occur with the implementation of these reasonably foreseeable compliance responses. Further, subsequent environmental review would be conducted at such a time that an individual project is proposed, and land use or construction approvals are sought. Short-term construction-related air quality impacts associated with the Proposed Amendments would be significant.



While the LCFS Regulation's primary goal is to reduce GHG emissions associated with transportation fuel used in California, the Proposed Amendments would also result in a notable decrease in emissions of oxides of nitrogen (NO<sub>x</sub>) and fine particulate matter (PM<sub>2.5</sub>) as discussed on pages 40 through 57 of the Recirculated Draft EIA. By 2046, the Proposed Amendments would result in a decrease of 3.5 and 1.4 tons per day (tpd) of NO<sub>x</sub> and PM<sub>2.5</sub> emissions, which will further the goals of the State Implementation Plan (SIP) Strategy to attain the national ambient air quality standards (NAAQS) as well as the attainment of California's ambient air quality standards (CAAQS). These standards are scientifically substantiated concentration-based thresholds intended to be protective of human health. Therefore, the reductions achieved by the Proposed Amendments would have a beneficial effect on the statewide inventory of criteria air pollutants. Nevertheless, as disclosed on pages 52 through 54 of the Recirculated Draft EIA, the Proposed Amendments have the potential to introduce localized pollution to communities within the proximity of biofuel production facilities and routes for biofuel feedstock and finished fuel transportation. However, CARB staff does not believe significant localized increases would be likely and anticipate overall beneficial long-term operational impacts statewide. Nevertheless, in an abundance of caution and for the purposes of complete public disclosure, the EIA concludes that long-term local air quality impacts associated with the Proposed Amendments could be potentially significant.

The Regulatory Setting in Attachment A to the EIA includes applicable laws and regulations regarding air quality. CARB does not have the authority to require the implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or state land use approval and/or permitting authority. New or modified facilities in California would generally qualify as a "project" under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation measures would be identified during the environmental review by agencies with project-approval authority. The recognized practices identified in Mitigation Measures 3-1 and 3-2 are routinely required to avoid and/or mitigate air quality-related impact.

In summary, because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with the EIA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce significant impacts. Although unlikely after the implementation of Mitigation Measures 3-1 and 3.2 and with an anticipated overall beneficial long-term operational impacts statewide, there is still the possibility of project-level air quality impacts, and so in an abundance of caution and for the purposes of complete public disclosure, the EIA concludes that long-term local air quality impacts associated with the Proposed Amendments could be potentially significant.

## 5. Master Response 5: Life-Cycle Emissions Modeling

**Comment:** Several comments were submitted arguing that CARB should perform a life-cycle analysis of the Proposed Amendments' effects on the generation of criteria air pollutants and greenhouse gas (GHG) emissions. Some commenters also call into question the methodology of the greenhouse gas and criteria pollutant emissions quantifications, including comments challenging CARB's designation of particular fuels as biogenic.

**Response:** CARB's LCFS is based on the principle that each fuel has "life cycle" GHG emissions and therefore examines the GHG emissions associated with the production, transportation, and use of a given fuel, as well as any potentially significant, reasonably foreseeable indirect effects on GHG emissions, such as changes in land use for some biofuels. Life cycle GHG emissions are calculated for every fuel pathway application using Board-adopted methodologies and are verified by accredited third-party verifiers annually. The life cycle analysis required by the LCFS includes analysis of both direct and indirect emissions. Staff uses or has adapted a number of publicly available modeling tools to assess these emissions. The LCFS calculates direct GHG emissions associated with transportation fuels using the California Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (CA-GREET3.0) model and the Oil Production Greenhouse Gas Emissions Estimator (OPGEE) model, and indirect emissions associated with land use change using the Global Trade Analysis Project (GTAP) model as described in Master Response 2. The CA-GREET model is the key life cycle analysis tool designated by the LCFS regulation for evaluation of fuel pathways. This model is based on the GREET model, an internationally acclaimed model with the ability to calculate life cycle GHG emissions for a wide variety of transportation fuels. GREET is publicly available and was created by Argonne National Laboratory, a subsidiary of the US Department of Energy. It is used by several governmental agencies for life cycle analysis purposes, including the U.S. EPA for the Renewable Fuel Standard, and the states of Oregon and Washington for their own LCFS programs. The model was originally released almost thirty years ago and is updated frequently, most recently in 2022. The LCFS regulation incorporates modifications to the GREET model to reflect California-specific emissions, which at times are more conservative than the GREET model itself, as is the case with land use change emissions. The California version of GREET is called CA-GREET and is used to determine the direct emissions for LCFS fuel pathways. CA-GREET and other modeling tools derived from CA-GREET are released for public reviews for stakeholder testing and comments before a new version is incorporated into amended regulations; this review includes the life cycle boundaries and baseline assumptions for each fuel. As part of the release of the Initial Statement of Reasons, and again with the Proposed 15-day changes to the LCFS Regulation, staff released estimates of the aggregate GHG impacts of the Proposed Amendments based on staff's modeling and underpinned by life cycle carbon intensity calculations from the CA-GREET model. Site-specific inputs to carbon intensity calculations are verified by accredited third-party verifiers on an annual basis to ensure their accuracy.

The LCFS program is just one of many factors incentivizing the production and use of low-carbon fuels. The Federal Renewable Fuel Standard (RFS) provides renewable

identification numbers (RIN) as a form of credits to support use of these fuels. Other economic support for liquid biofuels is available through the 40B (sustainable aviation fuel)<sup>12</sup> and 45Z (biodiesel and renewable diesel)<sup>13</sup> tax credits. Liquid biofuels are also considered biogenic under California's greenhouse gas inventory and Cap and Trade programs, and therefore do not incur cap and trade compliance obligations, unlike fossil gasoline and fossil diesel. Staff integrated the federal RFS and tax credit incentives into the production cost inputs for renewable diesel and biodiesel in the California Transportation Supply (CATS) model for both the baseline and analyzed scenarios to isolate the impact of the LCFS and ensure that production changes reflect the additive value of the LCFS. Therefore, the change in renewable diesel and biodiesel fuel volumes between the baseline and proposed scenario is estimated as a result of the additional incentive provided by LCFS. Support from LCFS credits is intended to stack with support from other sources and is a large part of the overall economic picture for producers and consumers of the fuels and leads to increased production in excess of Federal support alone. In addition, while the RFS RINs and federal tax credits incentivize production and use of these fuels anywhere in the United States, the LCFS program only supports fuels used in California and therefore has a market effect of attracting production and supply of those fuels to the State, as shown by the conversion of refineries in California by Marathon and Phillips 66. As other states and jurisdictions' demand increases for these fuels, the LCFS supports substantial demand and provides a strong signal for increased production. Because staff subtract the baseline quantities of biofuel volumes produced from the proposed scenario, staff did not consider it necessary to attempt to allocate particular greenhouse gas emissions benefits to other programs incentivizing use of biofuels.

Staff has also estimated the criteria air pollutant emissions associated with fuel production, fuel transport, and use of fuels expected to be used in California and released the workbooks and final results of this modeling in support of the Initial Statement or Reasons and the first 15-day changes to the Proposed Amendments. The criteria air pollutant emissions increases and decreases were disaggregated by source in the air quality workbooks and presented graphically on pages 51-52 of the Recirculated Draft EIA for both oxides of nitrogen (NOx) and particulate matter (PM). Pages 48-50 of the Recirculated Draft EIA also provide the net criteria pollutant emissions for NOx and PM by year for each air basin in California. Criteria air pollutants are not quantified as part of the ongoing carbon intensity analysis undertaken as part of fuel pathway application review, because credits and deficits in the LCFS program are assigned based on life cycle greenhouse gas emissions as compared to fossil fuel baseline fuels.

The LCFS program follows CARB's greenhouse gas (GHG) inventory approach when accounting for greenhouse gases from biogenic fuel combustion. CARB's GHG Inventory classifies CO<sub>2</sub> emissions from the combustion of biofuels as "biogenic CO<sub>2</sub>." All biofuels (ethanol, biodiesel, renewable gas, etc.) would be treated the same way consistent with Intergovernmental Panel on Climate Change's (IPCC) guidance. For fuel pathways in LCFS,

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<sup>12</sup> Internal Revenue Service, Notice 2024-37, 2024. <https://www.irs.gov/pub/irs-drop/n-24-37.pdf>

<sup>13</sup> Internal Revenue Service, Notice 2024-49, 2024. <https://www.irs.gov/pub/irs-drop/n-24-49.pdf>

the CO<sub>2</sub> tailpipe emissions from combustion of the biogenic fuel are not included in the carbon intensity, but the methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions from biofuel combustion are included in the CI and the GHG inventory, along with CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emitted from fossil fuel combustion. Per IPCC guidance, carbon dioxide (CO<sub>2</sub>) emissions from the combustion of biomass or biomass-based products (e.g., biofuels) are captured within the CO<sub>2</sub> emissions in the Agriculture, Forestry and Other Land Use (AFOLU) sector through the estimated changes in carbon stocks from biomass harvest, even in cases where the emissions physically take place in other sectors (e.g., energy).

Lastly, some commenters specifically expressed disagreement with the life cycle boundaries for dairy and swine manure biomethane pathways. The emissions quantification methodology for dairy and swine manure biomethane pathways within the LCFS was derived from CARB's Compliance Offset Protocol for Livestock Projects within the Cap-and-Trade program. This methodology was also publicly discussed on several occasions, including a Staff Discussion Paper released in 2017 in tandem with a dedicated staff workshop,<sup>14</sup> a subsequent FAQ document that describes similarities and differences between the LCFS LCA approach the Livestock Offset Protocol,<sup>15</sup> and most recently, the Instruction Manual for the Tier 1 CI Calculator for Dairy and Swine Biomethane pathways.<sup>16</sup> The methodology includes all greenhouse gas emissions associated with manure management, including the portion of manure that is managed in aerobic and anaerobic systems (i.e., manure that is not sent to a digester), in both the baseline and project scenarios, and all stages of biomethane collection, processing, and end use or destruction. Emissions associated with livestock operations are excluded from the analysis, consistent with treatment of fuels derived from waste or byproduct materials in life cycle analyses, due to the fact that there is no change to upstream livestock management as a consequence of routing manure to a digester or covered lagoon rather than an open lagoon. Commenters are encouraged to review the staff presentation at the 2023 informational LCFS Board item,<sup>17</sup> as well as the materials presented in the 2022 dairy workshop, for further information about the LCA framework for dairy and swine manure biomethane pathways.<sup>18</sup>

**Table 2-1: List of Comment Letters Containing Substantive Environmental Comments on the Draft EIA and Recirculated EIA**

<sup>14</sup> [Staff Discussion Paper - Renewable Natural Gas from Dairy and Livestock Manure.](#)

<sup>15</sup> [Low Carbon Fuel Standard - Frequently Asked Questions.](#)

<sup>16</sup> [https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/ca-greet/instr.manual\\_tier1\\_ci\\_calc\\_%20dairy%26swine\\_manure\\_biomethane.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/ca-greet/instr.manual_tier1_ci_calc_%20dairy%26swine_manure_biomethane.pdf)

<sup>17</sup> CARB. Meeting Presentation. Public Meeting to Hear and Update on the Low Carbon Fuel Standard. September, 2023. <https://ww2.arb.ca.gov/sites/default/files/barcu/board/books/2023/092823/23-8-1pres.pdf>

<sup>18</sup> CARB. Presentations. Workshop on Methane, Dairies and Livestock, and Renewable Natural Gas in California. March, 2022. <https://ww2.arb.ca.gov/our-work/programs/slcp/meetings>

| <b>Draft EIA Comment Letters</b> |             |                  |  |
|----------------------------------|-------------|------------------|--|
| <b>Comment Number</b>            | <b>Date</b> | <b>Name</b>      | <b>Affiliation</b>                         |
| 1                                | 1/5/2024    | EJAC             | Environmental Justice Advisory Committee   |
| 4                                | 1/16/2024   | Diana Kliche     | No affiliation                             |
| 19                               | 2/1/24      | Aaron Binkley    | No affiliation                             |
| 25                               | 2/8/24      | Amy Halpern-Laff | No affiliation                             |
| 26                               | 2/8/24      | Tim Wenger       | No affiliation                             |
| 27                               | 2/8/24      | Tom Progar       | No affiliation                             |
| 28                               | 2/8/24      | Julia Lowe       | Sierra Club Winding Waters group           |
| 29                               | 2/8/24      | Robert Rhodes    | Wilderness Society                         |
| 30                               | 2/8/24      | Susan Frye       | No affiliation                             |
| 31                               | 2/8/24      | Everett Murphy   | No affiliation                             |
| 32                               | 2/8/24      | Ginny Masullo    | No affiliation                             |
| 34                               | 2/8/24      | Elizabeth York   | No affiliation                             |
| 35                               | 2/8/24      | Mark Smith       | No affiliation                             |
| 37                               | 2/10/24     | Robert Sijgers   | No affiliation                             |
| 41                               | 2/14/24     | Susan Gibson     | No affiliation                             |
| 42                               | 2/14/24     | Karen Mayer      | No affiliation                             |
| 44                               | 2/14/24     | Margaret Eaton   | No affiliation                             |
| 45                               | 2/14/24     | Susan Austin     | No affiliation                             |
| 47                               | 2/14/24     | Nancy Ames       | No affiliation                             |
| 48                               | 2/15/24     | Ben Lilliston    | Institute for Agriculture and Trade Policy |
| 49                               | 2/15/24     | Magaret Laub     | Anaergia                                   |

Amendments to the Low Carbon Fuel Standard  
Response to Comments

Comment Responses

|     |         |                   |                        |
|-----|---------|-------------------|------------------------|
| 51  | 2/15/24 | Sherry Kerr       | No affiliation         |
| 52  | 2/15/24 | Goldie Potter     | No affiliation         |
| 57  | 2/15/24 | Diane Brost       | No affiliation         |
| 59  | 2/16/24 | Tansy Woods       | No affiliation         |
| 62  | 2/16/24 | Alix Schrek       | No affiliation         |
| 67  | 2/16/24 | Lacey Levitt      | No affiliation         |
| 68  | 2/16/24 | Claudia A Peters  | No affiliation         |
| 73  | 2/16/24 | David Jallo       | No affiliation         |
| 75  | 2/16/24 | Lili D            | No affiliation         |
| 78  | 2/16/24 | Lisa Winningham   | No affiliation         |
| 81  | 2/16/24 | Maura Lucas       | No affiliation         |
| 85  | 2/16/24 | Louise Gray       | No affiliation         |
| 87  | 2/16/24 | Geralyn Gulseth   | No affiliation         |
| 90  | 2/16/24 | Briana Anderson   | No affiliation         |
| 97  | 2/16/24 | Liza Tucker       | No affiliation         |
| 98  | 2/16/24 | Adam Aranyos      | No affiliation         |
| 107 | 2/16/24 | Perri Glass       | No affiliation         |
| 111 | 2/16/24 | Margot McMillen   | No affiliation         |
| 112 | 2/16/24 | Joanne Hedge      | No affiliation         |
| 125 | 2/17/24 | Ted Myers         | No affiliation         |
| 126 | 2/17/24 | Denise Vandermeer | No affiliation         |
| 127 | 2/17/24 | KL Johnson        | No affiliation         |
| 128 | 2/17/24 | Beth Jones        | Protect Pomme De Terre |
| 129 | 2/17/24 | Bernard Fenner    | Ductor Americas Inc    |

Amendments to the Low Carbon Fuel Standard  
Response to Comments

Comment Responses

|     |           |                                       |  |
|-----|-----------|---------------------------------------|--|
| 142 | 2/18/2024 | Ivan Light                            | No affiliation                           |
| 143 | 2/18/24   | Daniel Medrano                        | No affiliation                           |
| 144 | 2/18/24   | Norm Sandler                          | No affiliation                           |
| 145 | 2/18/24   | Chris Gilbert                         | No affiliation                           |
| 147 | 2/18/24   | Pat Lord; Bridgette Hobbs; Mary Lanis | No affiliation                           |
| 149 | 2/18/24   | Asher Goldman                         | Generate Capitol                         |
| 152 | 2/19/24   | William Brieger                       | Climate Action California                |
| 154 | 2/19/24   | Marti Thomas                          | No affiliation                           |
| 155 | 2/19/24   | Susan Wrasmann                        | No affiliation                           |
| 157 | 2/19/24   | Jasmin Ansar                          | The Climate Center                       |
| 163 | 2/19/24   | James Duffy                           | No affiliation                           |
| 164 | 2/19/24   | Ali McIntosh                          | Skynrg                                   |
| 169 | 2/19/24   | Charles Purshouse                     | Camco                                    |
| 172 | 2/19/24   | Jim Stewart                           | No affiliation                           |
| 175 | 2/20/24   | Charles Davidson                      | Sunflower Alliance                       |
| 179 | 2/20/24   | Kim Dupre                             | No affiliation                           |
| 180 | 2/20/24   | Neil Koehler                          | Renewable Fuels Association              |
| 190 | 2/20/24   | Jordan Garfinkle                      | Bloom Energy                             |
| 191 | 2/20/24   | Krysta Wanner                         | Western Propane Gas Association          |
| 193 | 2/20/24   | Lisa Whelan                           | Iowa Citizens for Community Improvement  |
| 201 | 2/20/24   | Nancy Pauken                          | No affiliation                           |
| 209 | 2/20/24   | Catherine Garoupa                     | Environmental Justice Advisory Committee |
| 215 | 2/20/24   | Nataley Williams                      | Clean Air Task Force                     |

Amendments to the Low Carbon Fuel Standard  
Response to Comments

Comment Responses

|     |         |                        |   |
|-----|---------|------------------------|---|
| 216 | 2/20/24 | Kyle Whitmore          | Union of Concerned Scientists                     |
| 217 | 2/20/24 | Molly Armus            | Friends of the Earth                              |
| 219 | 2/20/24 | Scott Hochberg         | Center For Biological Diversity                   |
| 222 | 2/20/24 | Nikita Pavlenko        | the International Council on Clean Transportation |
| 224 | 2/20/24 | Ira Dassa              | Twelve Benefit Company                            |
| 231 | 2/20/24 | Victoria Bogdan Tejada | No affiliation                                    |
| 235 | 2/20/24 | John Steelman          | Clean Air Task Force                              |
| 239 | 2/20/24 | Chriag Bhakta          | Food & Water Watch                                |
| 248 | 2/20/24 | Dan Ress               | Center on Race, Poverty, & the Environment        |
| 249 | 2/20/24 | Sam Wade               | Coalition for Renewable Gas                       |
| 250 | 2/20/24 | Tanya DeRivi           | Western States Petroleum Association              |
| 252 | 2/20/24 | Dallas Gerber          | Growth Energy                                     |
| 253 | 2/20/24 | Tim Gibbons            | Missouri Rural Crisis Center                      |
| 268 | 2/20/24 | Paul Sousa             | Western United Dairies                            |
| 270 | 2/20/24 | John Peck              | Family Farm Defenders                             |
| 281 | 2/20/24 | Claire Broome          | 350 Bay Area                                      |
| 285 | 2/20/24 | Jeremy Martin          | Union of Concern Scientists                       |
| 288 | 2/20/24 | Kiki Velez             | NRDC  |
| 289 | 2/20/24 | Jeremy Martin          | Union of Concern Scientists                       |
| 290 | 2/20/24 | Sam Uden               | UCS, NRDC, and WRI                                |
| 295 | 2/20/24 | Michael Maguire        | Office of Planning and Research                   |
| 299 | 2/20/24 | Ellison Folk           | Leadership Counsel for Justice and Accountability |
| 300 | 2/20/24 | Nicole Looney          | SMUD  |
| 301 | 2/20/24 | Noah Garcia            | EVgo  |



Amendments to the Low Carbon Fuel Standard  
Response to Comments

Comment Responses

|     |         |  |   |
|-----|---------|--|---|
| 302 | 2/20/24 | Julian Lake; Adrian Covert; Adam Klauber; Jared Asch | Bay Area Council                                  |
| 303 | 2/20/24 | Jane Sadler; Kyle Clark-Sutton                       | RMI   |
| 304 | 2/20/24 | Oscar Garcia   | Neste US, Inc.                                    |
| 308 | 2/20/24 | Kevin Welsh  | Airlines for America                              |
| 313 | 2/20/24 | Amelia Keyes   | Communities for a Better Environment              |
| 317 | 2/20/24 | Ellison Folk   | Leadership Counsel for Justice and Accountability |
| 322 | 2/20/24 | Anna Redmond; Stefan Unnasch                         | Life Cycle Associates LLC                         |
| 324 | 2/20/24 | Rock Zierman   | California Independent Petroleum Association      |
| 340 | 2/20/24 | Jamie Katz   | Central Valley Defenders for Clean Air and Water  |
| 348 | 2/20/24 | Patty Lovera   | Campaign for Family Farms and the Environment     |
| 349 | 2/20/24 | Gary Hughes  | Biofuelwatch                                      |
| 368 | 2/20/24 | Allie Wainer   | Center for a Liveable Future                      |
| 373 | 2/20/24 | Kyle Berquist  | Earthjustice                                      |
| 375 | 2/20/24 | Michael Wara   | Stanford University                               |
| 376 | 2/20/24 | Robert Parkhurst                                     | No affiliation                                    |
| 377 | 2/20/24 | Christine Ball-Blakely                               | No affiliation                                    |
| 378 | 2/20/24 | Joshua Wilson  | POET  |
| 380 | 2/20/24 | Michael O'Hare                                       | UC Berkeley                                       |
| 381 | 2/20/24 | Mary Elizabeth                                       | No affiliation                                    |
| 388 | 2/20/24 | Phoebe Seaton  | Leadership Council                                |
| 390 | 2/20/24 | Matthew Sheets                                       | Land Stewards Project                             |
| 392 | 2/20/24 | Sasan Saadat   | Earthjustice                                      |

|   |             |   |   |
|---|-------------|---|---|
| 398                                     | 2/20/24     | Daniel Chandler                                   | 350 Humbolt   |
| 401                                     | 2/20/24     | Tess Dornfeld                                     | No affiliation  |
| 407                                     | 2/27/24     | Brittany Benesi                                   | American Society for the Prevention of Cruelty to Animals |
| <b>Recirculated EIA Comment Letters</b> |             |   |   |
| <b>Comment Number</b>                   | <b>Date</b> | <b>Name</b>                                       | <b>Affiliation</b>  |
| R1                                      | 8/16/2024   | Vivian Blackstone                                 |   |
| R2                                      | 8/16/2024   | LII D   |   |
| R3                                      | 8/28/2024   | Alex Meyer  |   |
| R4                                      | 8/30/2024   | J.D. Hanna, President                             | Kansas Corn Growers Association                           |
| R5                                      | 9/12/2024   | Rafaela Martinez                                  |   |
| R6                                      | 9/12/2024   | Dante Butler                                      |   |
| R7                                      | 9/23/2024   | Dennis Clarke                                     |   |
| R8                                      | 9/23/2024   | Juan Carrillo, Assemblymember, 39th District      | Assembly California Legislature                           |
|   |             | Carlos Villapudua, Assemblymember, 13th District  |   |
|   |             | Steven Bradford, Senator, 35th District           |   |
|   |             | Avelino Valencia, Assemblymember, 68th District   |   |
|   |             | Anna Caballero, Senator, 14th District            |   |
|   |             | Josh Newman, Senator, 29th District               |   |
|   |             | Tim Grayson, Senator, 15th District               |   |
|   |             | Susan Rubio, Senator, 22nd District               |   |
| R9                                      | 9/29/2024   | Maya Khosla                                       |   |
| R10                                     | 9/11/2024   | Al Muratsuchi, Assemblymember, 66th District      | Assembly California Legislature                           |
|   |             | Ben Allen, Senator, 24th District                 |   |
|   |             | Scott Wiener, Senator, 11th District              |   |
|   |             | Anthony Rendon, Speaker Emeritus, 62nd District   |   |
|   |             | Eloise Gómez Reyes, Assemblymember, 50th District |   |
|   |             | Gail Pellerin, Assemblymember, 28th District      |   |
|   |             | Rick Chavez Zbur, Assemblymember, 51st District   |   |
|   |             | Ash Kalra, Assemblymember, 25th District          |   |
| R11                                     | 9/30/2024   | Luz Rivas, Assemblymember, 43rd District          | Neste US, Inc.  |
|   |             | Oscar Garcia, Sr. Regulatory Affairs Manager      |   |

Amendments to the Low Carbon Fuel Standard  
Response to Comments

Comment Responses

|      |           |   |   |
|------|-----------|---|---|
| R12  | 9/10/2024 | Andrea Vidaurre, Co-Founder & Policy Coordinator                          | People's Collective for Environmental Justice         |
|      |           | Lauren Gallagher, Attorney & Legal Fellow                                 | Communities for a Better Environment                  |
|      |           | Phoebe Seaton, Co-Executive Director                                      | Leadership Counsel for Justice and Accountability     |
|      |           | Nina Robertson, Senior Attorney   | Earthjustice  |
|      |           | Gracya Mohabir, Clean Air and Energy Regulatory Advocate                  | California Environmental Voters                       |
|      |           | Jamie Yates, Climate & Renewable Energy Analyst                           | Pacific Environment                                   |
|      |           | Casey Coward, Research Lead   | SEIU United Service Workers West                      |
|      |           | Jane Williams, Executive Director   | California Communities Against Toxics                 |
|      |           | Marven Norman, Policy Coordinator   | Center for Community Action and Environmental Justice |
|      |           | Ellie Cohen, Chief Executive Officer                                      | The Climate Center                                    |
|      |           | Christina Scaringe, California Climate Policy Director                    | Center for Biological Diversity                       |
|      |           | Peter De Gregorio, Litigation Committee Member                            | Climate Reality, Monterey Chapter                     |
|      |           | Kimberly McCoy, Policy Advocate   | Central California Asthma Collaborative               |
| R13  | 9/30/2024 | Sophie Ellinghouse, Vice President, General Counsel & Corporate Secretary | Western States Petroleum Association                  |
| R14  | 9/30/2024 | Orran Balagopalan   | Leadership Counsel for Justice and Accountability     |
| R15a | 9/30/2024 | Steven Berry  | Yale University                                       |
| R15b | 9/30/2024 | Steven Berry  | Yale University                                       |
| R15c | 9/30/2024 | Tim Searchinger,  | Princeton University                                  |
| R16  | 9/30/2024 | Joshua Wilson   | POET  |
| R17  | 9/30/2024 | Lauren Gallagher, Attorney & Legal Fellow                                 | Communities for a Better Environment                  |
| R18  | 9/30/2024 | Shaye Wolf, PhD, Climate Science Director                                 | Center for Biological Diversity                       |
| R19  | 9/30/2024 | Craig A. Moyer, Executive Director and General Counsel                    | Western Independent Refiners Association              |
| R20  | 9/30/2024 | Noah Verleun, President & CEO   | Global Clean Energy Holdings, Inc.                    |
| R21  | 9/30/2024 | Chad Hanson, Ph.D.  | John Muir Project                                     |
| R22  | 9/30/2024 | Nina Robertson and Matt Vespa   | Earthjustice  |
| R23  | 9/30/2024 | Maya Khosla, MS.  |   |

## **B. 45 Day Comments and Responses on the Draft and Recirculated Environmental Impact Analyses**

### **1. Individual Comments and Responses on the Draft Environmental Analysis**

#### **Comment Letter 1**

01/05/2024

Environmental Justice Advisory Committee (EJAC)

**1-1:** The commenter states, “1. Conduct and incorporate a full life cycle assessment of all air pollution and GHG emissions for all pathways, and their implications for environmental justice communities. 2. Conduct a full accounting of GHG and air pollution emissions associated with pathways relying on the production of fuel from livestock and dairy manure.”

**Response:** Please refer to Master Responses 4 and 5. The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to cost concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**1-2:** The commenter states, “Be it further resolved that the EJAC recommends that CARB formally consider the Comprehensive EJ Scenario as a regulatory alternative in the LCFS rulemaking process. Be it further resolved that the EJAC recommends that CARB reform the LCFS to strengthen the Low Carbon Fuel Standard’s support for zero emission vehicles including mass transit vehicles, drayage duty trucks, and heavy-duty trucks.”

**Response:** Section 15126.6 (c) of the CEQA Guidelines addresses the selection of a range of reasonable alternatives. The range of potential alternatives to a proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. “[T]here is no ironclad rule governing the nature or scope of the alternatives to be discussed in an Environmental Impact Report (EIR or EIA in this case), other than the rule of reason.” (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 576; *In re Bay-Delta etc.* (2008) 43 Cal.4th 1143, 1162–1164; CEQA Guidelines, § 15126.6, subd. (a).) Section 15126(a) states the “EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider

alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives.”

Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.” These guidelines were followed and complied with in Chapter 7 of the Draft EIA, which addresses four alternatives.

Ultimately, the Draft EIA presents a reasonable range of alternatives, evaluates their potential to achieve most of the basic project objectives, and evaluates whether the respective alternative would avoid or reduce the potentially significant environmental impacts of the Proposed Amendments in compliance with CEQA requirements.

**Comment Letter 4**

01/16/2024  
Diana Kliche

**4-1:** The commenter states, “1. Eliminate “avoided methane crediting” in 2024. 2. Address inaccuracies in the Life Cycle Assessment that ignore associated up- and downstream greenhouse gas emissions from factory farm gas production. 3. Remove the 10-year “grace period” for factory farm gas producers.”

**Response:** Please refer to Master Responses 1 and 5.

**Comment Letter 19**

2/1/2024

Aaron Binkley

**19-1:** The commenter states, “I encourage the Board to include a strong cap on vegetable oil-based fuels eligible for the LCFS to help strengthen and stabilize California’s LCFS. This should be done in conjunction with and in addition to proposed chain of custody tracking requirements for virgin vegetable-based oils. This will have the added benefit of combatting greenwashing claims due to the climate and land use impacts from rapidly increasing use of vegetable-based oil feedstocks.”

**Response:** As discussed in detail in Section 3.A.2 of the Recirculated EIA, a comparatively small level of GHG emissions related to the construction and operation of facilities associated with the compliance responses would be offset by the reductions in GHG emissions from the implementation of the Proposed Amendments. Implementation of the proposed strategy would result in a beneficial impact related to GHG emissions. However, impacts related to land use would be significant and unavoidable due to the land use conversions associated with the Proposed Amendments, as explained in Section 4.B.11 of the Draft EIA. Refer to Sections 3.A.2 of the Recirculated EIA and 4.B.11 of the Draft EIA for detailed discussion related to the Proposed Amendments’ impacts on GHG emissions and land use, respectively. Please refer to Master Response 2.

**Comment Letter 25**

2/8/2024

Amy Halpern-Laff

**25-1:** The commenter states, “Please stop incentivizing factory farm gas and anaerobic digesters. CAFOs are filthy, cruel, and exploitative of humans and animals. Rather than provide an additional revenue stream, we should be disincentivizing CAFOs.”

**Response:** Please refer to Master Response 1.



**Comment Letter 26**

2/8/2024  
Tim Wegner

**26-1:** The commenter states, “Writing to encourage the enactment of the low carbon fuel standard in California. The state’s policies impact the largest economy in the nation and one of the largest in the world, and these policies frequently spill over to other states – California should be leader in holding factory farms, already bastions of cruelty, to account for their emissions.”

**Response:** Please refer to Master Responses 1 and 3.

Comment Letter 27

2/8/2024

Tom Progar

**27-1:** The commenter states, “Please remove CAFO (factory farm) manure biogas from the clean fuel standard. This “avoided methane credit” is expanding destructive factory farming throughout the country. Rural communities, small farmers, farm animals, and the environment all suffer because of this horrible greenwashing scheme.”

**Response:** Please refer to Master Responses 1 and 3.

**Comment Letter 28**

2/8/2024  
Julia Lowe  
Sierra Club Winding Waters Group

**28-1:** The commenter states, “Factory farm gas is not clean energy. It’s composed primarily of methane, a potent greenhouse gas that traps 80 times more heat than carbon dioxide.

The extraction of methane from factory farm waste does nothing to alleviate the massive harm inflicted by factory farms on local communities. The production of methane from factory farms causes public health and climate impacts, compounding the existing impact from factory farms.”

**Response:** Please refer to Master Response 1.

**28-2:** The commenter states, “The LCFS is a California policy, but it is driving the expansion of factory farms and factory farm gas in numerous states, including MY state.”

**Response:** Please refer to Master Responses 1 and 3.

**28-3:** The commenter states, “What kind of technology is? This is a set back to our survival, it is a FALSE CLIMATE SOLUTION and it should be stopped. Please do nothing to incentivize polluting factory farms. We have enough of them in Indiana and I don’t want any more. Turn to cleaner energy technology now.”

**Response:** Please refer to Master Responses 1 and 3.

**Comment Letter 29**

2/8/2024  
Robert Rhodes  
Wilderness Society

**29-1:** The commenter states, “Stop permitting FACTORY FARMS. Your environmental laws are a joke!!!”

**Response:** Please refer to Master Response 1.

**Comment Letter 30**

2/8/2024  
Susan Frye

**30-1:** The commenter states, “Please stop activity that promotes destructive and polluting CAFOs.”

**Response:** Please refer to Master Response 1.

**Comment Letter 31**

2/8/2024  
Everett Murphy

**31-1:** The commenter states, “It is driving the construction of more factory farms and factory farm biogas project in states far from California, causing severe harm to air, water, public health, rural economies, and overall quality of life.”

**Response:** Please refer to Master Responses 1, 3, and 4.

**31-2:** The commenter states, “The current flaws in the LCFS, such as “avoided methane crediting” and inaccurate life cycle assessments, not only enable pollution but disproportionately harm low-income communities and communities of color. Factory farms, predominantly situated these marginalized areas, inflict severe damage on air, water, public health, rural economies, and overall quality of life.”

**Response:** Please refer to Master Responses 1, 4, and 5.

**31-3:** The commenter states, “Address inaccuracies in the Life Cycle Assessment that ignore associated up and downstream greenhouse gas emissions from factory farm gas production.”

**Response:** Please refer to Master Responses 1 and 5.

**Comment Letter 32**

2/8/2024

Ginny Masullo

**32-1:** The commenter states, “It is driving the construction of more factory farms and factory farm biogas projects in states far from California, causing severe harm to air, water, public health, rural economies, and overall quality of life. Incentives for more factory farms is not a solution for combatting climate pollution by factory farms.”

**Response:** Please refer to Master Responses 1, 3, and 4.

**32-2:** The commenter states, “Address inaccuracies in the Life Cycle Assessment that ignore associated up and downstream greenhouse gas emissions from factory farm gas production.”

**Response:** Please refer to Master Responses 1 and 5.

**Comment Letter 34**

2/8/2024  
Mark Smith

**34-1:** The commenter states, “Factory farms, predominantly located in these marginalized areas, cause severe harm to our air, water ,public health, rural economies, and overall quality of life.

This year, the California Air Resources Board (CARB) has the chance to adopt new rules that would realign the LCFS with California’s environmental justice commitments and stop rewarding factory farms for their pollution.

CARB’s Environmental Justice Advisory Committee presented a clear alternative to the dirty status quo, and submitted a resolution calling for an end to the current LCFS policies that reward factory farm polluters.”

**Response:** Please refer to Master Responses 1 and 4.



**Comment Letter 35**

2/8/2024  
Elizabeth York

**35-1:** The commenter states, “Address inaccuracies in the Life Cycle Assessment that ignore associated up and downstream greenhouse gas emissions from factory farm gas production.”

**Response:** Please refer to Master Responses 1 and 5.

**Comment Letter 37**

2/10/2024  
Robert Sijgers

**37-1:** The commenter states, “Stop increased GHG emissions as a result of factory farming.”

**Response:** Please refer to Master Response 1.

**37-2:** The commenter states, “Dairy manure contributes to about a third of the nitrate polluting groundwater in the Central Valley and has polluted in many areas 30-40% of private wells.”

**Response:** Please refer to Master Responses 1 and 4.

**37-3:** The commenter states, “It takes about 2 agricultural acres per head of cattle to sustain just feeding them, which is then not available for feeding people. Incentivizing factory farms makes this worse. Biogas digester promotion aggravates the problem and dairy herds become just the first stage of an industrial money-making scheme that is already severely impacting our public health and our environment.”

**Response:** Please refer to Master Responses 1 and 2.

**37-4:** The commenter states, “CARB disregards violations of out-of-state rules and regulations.”

**Response:** Please refer to Master Response 3. The commenter provides CARB disregards violations of out-of-state rules and regulations, but does not provide those are or the physical impacts to the environment associated with those violations. To the extent the commenter is suggesting the Proposed Amendments would cause violations of out-of-state rules and regulations, this is speculative. Entities acting pursuant to the Proposed Amendments are required to comply with the law. Violating state laws or regulations is not a reasonably foreseeable response to the Proposed Amendments.

**Comment Letter 41**

2/14/2024

Susan Gibson

**41-1:** The commenter states, “Including factory farm gas in California’s Low Carbon Fuel Standard would: Incentivize more corporate factory farms, harming family farmers, rural communities, and our environment.”

**Response:** Please refer to Master Response 1.

**Comment Letter 42**

2/14/2024

Karen Mayer

**42-1:** The commenter states, “One of the main reasons to nix factory farm gas from the standard is that it will encourage more large factory farms, making it harder for small family farms to prosper while these corporate farms push down market prices with overproduction. More issues with this bill include the fact that multinational large meatpackers will be paid for their pollution, and the bill will create incentives via government subsidies to support anaerobic digesters for factory farm gas. This would add more factory farms which will lead to more methane, more water and air pollution, more corporate consolidation. I’m in the Midwest and know this will not lead to less carbon release in our atmosphere. Please strike this portion of the amendments.”

**Response:** Please refer to Master Responses 1, 3, and 4.

**Comment Letter 44**

2/14/2024

Margaret Eaton

**44-1:** The commenter states, “Please do not allow the CA Air Resources Board to allow corporate factory farms across the country to sell methane to this misguided system – which is not a solution to our country’s air pollution problem. We must stop allowing big corporate farms to create this hazardous gas in the first place.”

**Response:** Please refer to Master Responses 1 and 3.

**Comment Letter 45**

2/14/2024  
Susan Austin

**45-1:** The commenter states, “Please do not include factory farm gas in the new California Low Carbon Fuel standard. Doing so is harmful to the environment by encouraging more factory farms. These are polluting to our land, water and air quality resources.

Corporate out-of-state and in many cases out of country businesses will profit from this change.

Thank you for not including factory farm in your efforts to lower carbon emissions.”

**Response:** Please refer to Master Responses 1, 3, and 4.

**Comment Letter 47**

2/14/2024  
Nancy Ames

**47-1:** The commenter states, “This is a bad plan. Corporate livestock operations are massive polluters of air, water, and land. I do not want to incentivise these businesses or attract them to rural Missouri. They are a huge cost to the communities located near them, and massively destructive for wildlife. Vote NO”

**Response:** Please refer to Master Responses 1, 3, and 4.

**Comment Letter 48**

2/15/2024

Ben Lilliston

Institute for Agriculture and Trade Policy

**48-1:** The commenter states, “Biogas derived through methane digesters on large-scale CAFOs requires enormous quantities of animal manure. The largest source of direct methane emissions from dairy and beef CAFOs is the animals themselves (at least two-thirds), the remaining emissions (methane and nitrous oxide) come from giant, often liquified, waste lagoons. Hog CAFO emissions come entirely from liquified manure storage. Other greenhouse gas emissions associated with the CAFO system include feed production and the spreading of manure on neighboring fields. Despite the significant emissions coming from the CAFO system, CARB’s current emissions intensity analysis gives biogas a negative carbon intensity score, lower than any other transportation fuel, including electricity produced by solar and wind energy which produce no discernable waste, emissions or water pollution.

**Response:** Please refer to Master Responses 1 and 4.

**48-2:** The commenter states, “CARB ignores impacts on rural communities outside of California.”

**Response:** Please refer to Master Response 3 regarding out-of-state impacts. The commenter does not specify the impacts it claims CARB ignores, so CARB is not able to provide a further response.



## Comment Letter 49

2/15/2024

Magaret Laub

**49-1:** The commenter states, “Anaergia encourages CARB to adopt a more aggressive 2030 CI reduction target (40-55%) to be consistent with SB 32. It is not the time to set manageable goals and to delay more significant reductions; rather, we must make leaps in carbon emissions reductions to secure additional runway to mitigate and reverse climate change.”

**Response:** As noted throughout the EIA, the Proposed Amendments have been developed in consideration of the state’s long-term GHG reduction goals, including that enumerated in SB 32 (i.e., a 40 percent reduction from a 1990 statewide GHG inventory by 2030). As stated on page 5 of the Draft EIA, “In 2016, the California legislature adopted Senate Bill (SB) 32, which builds on the progress of AB 32 by codifying a statewide target to reduce GHG emissions 40 percent below 1990 levels by 2030. This target was later superseded by the passage of AB 1279 (Muratsuchi, Chapter 337, Statutes of 2022), which established long-term statewide GHG reduction targets of reducing GHG emissions by 85 percent, from a 1990 level and achieving carbon neutrality by no later than 2045. California’s 2022 Climate Change Scoping Plan to Achieve Carbon Neutrality (2022 Scoping Plan Update), adopted in December 2022 by CARB, provides the framework for the state to achieve this target through continuation of existing measures implemented under SB 32 and through the development of new strategies. The 2022 Scoping Plan Update identifies developing more stringent LCFS targets as one of the primary measures for achieving the State’s GHG 2045 target of carbon neutrality. To meet those goals, CARB staff developed the Proposed Amendments to improve California’s long-term ability to support the consumption of increasingly lower-CI fuels and improve the LCFS program’s overall effectiveness.”

The Proposed Amendments include provisions to strengthen the annual carbon intensity benchmarks both pre- and post-2030. As discussed on pages 13 through 14 of the Draft EIA, the Proposed Amendments propose adjusting the previously adopted 20 percent CI reduction by 2030 to a 30 percent CI reduction by that same year. This new target is intended to accelerate the GHG reductions needed from the transportation sector to align with the state’s long-term goal of achieving carbon neutrality by 2045. This target was developed in consideration of economic and technological feasibility. Moreover, CARB considered an Alternative that included a 40 percent CI reduction target by 2030 (Alternative 4) but ultimately dismissed this alternative because “increasing the CI reduction target and allowing fewer limits on biofuels crediting in this scenario increases the risk of greater environmental impacts than the Proposed Amendments. The alternative also would result in higher direct costs and CARB is mandated by AB 32 to consider the cost-effectiveness of measures. As an example of the potential risk of greater environmental impacts, increasing the CI reduction target to 40 percent in 2030 would result in an increase of the compliance responses associated with the Proposed Amendments and, in turn, would result in an increase in the environmental impacts as disclosed in Chapter 4.0. CARB staff did not pursue further evaluation of this alternative for the purposes of the Draft EIA” (Draft EIA page 179). For these reasons, Alternative 4 was rejected.

No changes to the Draft EIA are required in response to this comment, and no further response is needed.

**49-2:** The commenter states, “Updating the fugitive methane emission factor will more accurately reflect the avoided carbon emissions associated from biomethane produced from anaerobic digestion of landfill-diverted organic waste. A more accurate CI score for biomethane from organic waste digestion will accelerate the deployment of anaerobic digestion throughout the State for landfill-diverted organics. This in turn can help the state achieve its goals to reduce SLCP emissions, per SB 1383. Ultimately, this simple calculator update to reflect the latest landfill monitoring techniques and data can have an outsized impact on minimizing fugitive emissions of SLCP at landfills. Neglecting to correct the Tier 1 default GCE will result in the continued undervaluation of biomethane from organic waste and severely dampened investment in critical climate mitigating infrastructure.”

**Response:** Please refer to Response to Comment 49-1 and Master Response 5.

**Comment Letter 51**

2/15/2024  
Sherry Kerr

**51-1:** The commenter states, “I am truly concerned about having more huge corporate farms moving into our state. (Missouri). And, paying them for the methane they produce would invite MORE to come to our state.”

**Response:** Please refer to Master Responses 1 and 3.

**51-2:** The commenter states, “They are harmful to our water supply and harmful to the environment.....”

**Response:** Please refer to Master Responses 3 and 4.

**Comment Letter 52**

2/15/2024  
Goldie Potter

**52-1:** The commenter states, “This is endangering the family farm and all water quality in the state of Missouri. Please stop incentivizing CAFOs by claiming their methane is a renewable resource. It is just like all the waste they want to dump in our rivers – POLLUTION. Please stop.”

**Response:** Please refer to Master Responses 1 and 4.

**Comment Letter 57**

2/15/2024

Diane Brost

**57-1:** The commenter states, “This would add more factory farms which will lead to more methane, more water and air pollution, more corporate consolidation.”

**Response:** Please refer to Master Responses 1 and 4.

**57-2:** The commenter states, “I’m in the Midwest and know this will not lead to less carbon release in our atmosphere. Please strike this portion of the amendments.”

**Response:** Please refer to Master Response 1 regarding the carbon reduction potential of avoided methane credits from livestock.

**Comment Letter 59**

2/16/2024

Tansy Woods

**59-1:** The commenter states, “Dear Governor Newsom and Members of the California Air Resources Board (CARB), As a California resident, I am writing to urge you to stop using tax payer dollars to fund factory farm biogas projects, which threaten the well-being of animals, people, and the planet. Funding biogas production under the Low Carbon Fuel Standard (LCFS) incentivizes the consolidation and growth of the notoriously harmful factory farming industry. Every year, this industry forces billions of animals to suffer in unimaginably cruel conditions. It generates air, water, and methane pollution that entrench fossil fuel interests and accelerate the climate crisis. And it increases rates of high blood pressure, respiratory conditions, and waterborne illnesses for local communities. To begin addressing these substantial harms, I implore you to implement the following reforms LCFS: 1. Eliminate “avoided methane crediting in 2024.”

**Response:** Please refer to Master Responses 1 and 4.

**59-2:** The commenter states, “2. Address inaccuracies in the Life Cycle Assessment that ignore associated up and downstream greenhouse gas emissions from factory farm gas production. 3. Remove the 10-year “grace period” for factory farm gas producers. 4. Stop double counting by allowing factory farm gas projects paid for and claimed by other programs to sell LCFS credits as well. The future of our communities and shared environment is in your hands. Please reform LCFS to create a safer healthier home for all Californians.”

**Response:** Please refer to Master Response 5.

**Comment Letter 62**

2/16/2024  
Alix Schrek

**62-1:** The commenter states, “California has more industrial dairies than any other state, polluting our rivers, depleting our groundwater, and emitting disastrous greenhouse gases. Now, factory farm polluters claim they are environmentally friendly because they produce ‘biogas.’ Even worse, they are using our tax dollars to fund this harmful greenwashing.”

**Response:** Please refer to Master Responses 1, 3, and 4.

**Comment Letter 67**

2/16/2024

Lacey Levitt

**67-1:** The commenter states, “Please end current Low Carbon Fuel Standard (LCFS) policies that reward factory farm polluters. Investing in biogas means investing in even more factory farm pollution.”

**Response:** Please refer to Master Response 1.



**Comment Letter 68**

2/16/2024

Claudia A Peters

**68-1:** The comment subject line states, “Factory Farming,” and the commenter states, “This is not only harmful to animals, which should be your top priority, it increases pollution and increases carbon in the air.”

**Response:** Please refer to Master Responses 1 and 4.

**Comment Letter 73**

2/16/2024  
David Jallo

**73-1:** The commenter states, “I want to express my opposition to the dairy industry receiving support for its biogas production. These incentives support an industry built on pollution and cruelty. It’s a classic example of greenwashing and does not benefit the environment. Biogas capture is inefficient, costly and does not mitigate atmospheric warming gas production. Ending dairy operations is the most effective way to stop their destructive effects. Please do not support their damaging activities.”

**Response:** Please refer to Master Responses 1 and 4. Biogas sources include landfills, dairy and swine facilities, food processing companies, and wastewater treatment plants. Many dairy or swine manure biogas-to-biomethane pathways have been certified under the current LCFS. Potential compliance responses to the Proposed Amendments would generally include the construction of infrastructure needed to collect biogas and produce and transport biomethane. Potential compliance responses also include additional production of low-CI electricity or hydrogen from biomethane derived from dairy operations. The LCFS modeling assumes the use of fuel cells to generate this electricity, which do not rely on combustion. The environmental impacts associated with the potential compliance responses related to biogas capture are discussed in Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA.

**Comment Letter 75**

2/16/2024  
Lili D

**75-1:** The commenter states, “California has more industrial dairies than any other state, polluting our rivers, depleting our groundwater, and emitting disastrous greenhouse gasses. Now, factory farm polluters claim they are environmentally friendly because they product “biogas.” Even worse, they are using our tax dollars to fund this harmful greenwashing.”

**Response:** Please refer to Master Responses 1 and 4.

**75-2:** The commenter states, “In fact, investing in biogas helps maintain and expand factory farms. Investing in biogas means investing in even more factory farm pollution.”

**Response:** Please refer to Master Response 1.

**Comment Letter 78**

2/16/2024

Lisa Winningham

**78-1:** The commenter states, “Biogas from CAFOs is neither clean nor naturally renewable. It’s not a replacement for clean solar, water, wind, and geothermal energy. It does not solve the environmental degradation or the human and other animal suffering caused by factory farming. This Earth Day, we must reject biogas in favor of energy and agricultural changes that can actually build a sustainable, just future.”

**Response:** Please refer to Master Responses 1 and 4.

**Comment Letter 81**

2/16/2024

Maura Lucas

**81-1:** The commenter states, “Please stop rewarding factory farms for their pollution. Biogas is unsustainable and unnecessary. Stop investing in factory farm gas.”

**Response:** Please refer to Master Response 1.

**Comment Letter 85**

2/16/2024  
Louise Gray

**85-1:** The commenter states, “California has more industrial dairies than any other state so it is polluting rivers, depleting groundwater, and emitting disastrous greenhouse gasses!!”

**Response:** Please refer to Master Responses 1 and 4.

**85-2:** The commenter states, “Now, factory farm polluters claim they are environmentally friendly because they produce “biogas.””

**Response:** Please refer to Master Response 1.

**85-3:** The commenter states, “Even worse, they are using tax dollars to fund this harmful greenwashing because the fact is Biogas is unsustainable and unnecessary – it does not reduce the dairy industry’s environmental footprint!!”

**Response:** Please refer to Master Response 1 and 4.

**85-4:** The commenter states, “Investing in biogas means investing in even more factory farm pollution.”

**Response:** Please refer to Master Response 1 and 4.

**Comment Letter 87**

2/16/2024  
Geraldyn Gulseth

**87-1:** The commenter states, “Please adopt rules that do not reward pollution producing factory farms. We need to take responsible steps to fight climate change now. Please end policies that encourage pollution.”

**Response:** Please refer to Master Responses 1 and 4.

**Comment Letter 90**

2/16/2024

Briana Anderson

**90-1:** The commenter states, “I am a lifelong Missouri resident with a long family history of small farmers. I have seen the harm inflicted by factory farms in my state, and I am fully aware of the negative impacts of factory farms on the environment, public health, animal welfare, and local economies. “

**Response:** Please refer to Master Responses 1, 3, and 4.

**90-2:** The commenter states, “When I learned that the CARB wants to include factory farm gas in its Low Carbon Fuel Standard, I became so confused. The science is very clear that methane is not a climate-friendly gas. Everyone is aware that factory farms are nothing but harmful. Allowing factory farms to sell the methane created by housing massive numbers of cows and hogs as supposedly “carbon negative fuel” is a completely harmful and misguided idea. Please consider the negative consequences of this proposal and scrap it.”

**Response:** Please refer to Master Response 1.



**Comment Letter 97**

2/16/2024

Liza Tucker

**97-1:** The commenter states, “Ratcheting down Carbon Intensity reduction targets for transportation fuels is a noble goal. If the board adopts the staff recommendation, however, it will cause irreparable pain to consumers at the pump while facilitating continued, unacceptable damage to the environment.”

**Response:** Please refer to Master Response 4.

**97-2:** The commenter states, “By prioritizing biofuels over electrification, CARB has created a monster that is sucking up unreasonable subsidies at the expense of drivers, creating incentives for refiners to decrease needed refining capacity, and aiding deforestation in the Amazon by propping up soybean farming.”

**Response:** Please refer to Master Response 2.

**97-3:** The commenter states, “The preponderance of projects the LCFS supports still produce planet-damaging and toxic emissions rather than moving far more quickly to a zero-emissions transportation structure via electrification. Both Marathon and Phillips 66 are investing in U.S. soybean processing plants as their renewable diesel requires large amounts of soybean oil that is rapidly becoming a preferred feedstock. Almost all the renewable diesel produced in America is consumed in California because of the LCFS program. Most of it is from out-of-state or imported from South American countries that are home to tropical rainforest that extends across several of them.

**Response:** Please refer to Master Responses 2 and 3.

**97-4:** The commenter states, “Phillips 66 plans to produce renewable diesel using soy bean oil from Argentina, the world’s largest exporter of soybean oil, according to the Union of Concerned Scientists. ‘This one huge facility could potentially consume about half Argentina’s soybean exports and 20 percent of global exports,’ according to UCS senior scientist Jeffrey Martin. Demand for soy and palm oil is displacing communities and leading to the slashing and burning of South American rainforests, according to the Rainforest Rescue. ‘This deforestation is accelerating climate change by releasing billions of tons of CO<sub>2</sub> into the atmosphere – by some estimates, deforestation has a greater impact on the climate than the world’s entire fleet of motor vehicles,’ the organization reports. ‘Moreover, arable land is scarce, and its use for fuel crops is contributing to rising food prices and world hunger.’”

**Response:** Please refer to Master Responses 2 and 3.

**97-5:** The commenter states, “The LCFS has been the nation’s primary driver of factory farm biogas development, according to Food & Water Watch. Big Oil and Big Ag behemoths such as Chevron, BP, Shell, Smithfield, Perdue, and Tyson have invested heavily in a national

methane production network from livestock waste that generates revenue from so-called 'clean energy' renewable biogas under credit trading schemes such as the LCFS.

Such systems are in fact giant sources of pollution featuring vast manure lagoons that increase methane emissions, shoot pollutants such as ammonia and hydrogen sulfide into the air, and sicken communities.

**Response:** Please refer to Master Responses 1 and 4.

**97-6:** The commenter states, "A vote for the staff proposal is a vote to ask California drivers to pay an additional 50 cents per gallon of gasoline to support biofuels that contribute to air pollution, increase food prices, and increase deforestation in the Amazon. CARB must ensure that the transition away from fossil fuels results in a zero-carbon emissions economy not an economic bonanza for biofuels polluters."

**Response:** Please refer to Master Responses 2 and 5.

**Comment Letter 98**

2/16/2024

Adam Aranyos

**98-1:** The commenter states, “The state of California has long stood as a beacon of progress in environmental protection and ethical standards. However, the continued financial incentives for biogas as a byproduct of factory farming practices are in stark contradiction to these values. Beyond the significant issues of water pollution, groundwater depletion, and greenhouse gas emissions, the system of factory farming inflicts tremendous suffering on countless animals. These sentient beings are confined in overcrowded, unnatural conditions, deprived of their basic instincts and welfare, all in the name of efficiency and profit.”

**Response:** Please refer to Master Responses 1 and 4.

**98-2:** The commenter states, “Supporting biogas production under the current LCFS policies not only overlooks but also financially rewards the environmental degradation and animal cruelty inherent in the factory farming model. This approach detracts from the urgent need to shift towards more sustainable and humane agricultural practices. It sends a misleading message that we can mitigate climate change without addressing the root causes of these crises, including the ethical treatment of animals.”

**Response:** Please refer to Master Response 1 and 4.

**Comment Letter 107**

2/16/2024

Perri Glass

**107-1:** The commenter states, “Factory farms are disastrous for the environment and the animals imprisoned within.”

**Response:** Please refer to Master Response 1 and 4

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**Comment Letter 111**

2/16/2024

Margot McMillen

**111-1:** The commenter states, “As a person that lives near a giant swine confinement, I protest the building of any more of these factory facilities. This one has devastated my neighborhood and forced many people to move away. Because of the ventilation systems that must be engaged at all times, the collection of methane from this system is incomplete so that must methane escapes. Other pollution includes water pollution after the effluent is spared on fields. Our stream team finds excess nitrogen in the streams every spring. Building more of these giant facilities will only mean more pollution.”

**Response:** Please refer to Master Responses 1 and 4.

**Comment Letter 112**

2/16/2024

Joanne Hedge

**112-1:** The commenter states, “Growing research & investigation of Big Dairy & corporate agricultural complicity in polluting air, water, and land add up to greater climate impacts at a time when we require less, and way less!”

**Response:** Please refer to Master Responses 4 and 5.

**Comment Letter 125**

2/17/2024

Ted Myers

**125-1:** The commenter states, “This is one of the leading contributors to global warming. Want a planet? Stop all high-methane, like cow and pig manure from entering the atmosphere.”

**Response:** Please refer to Master Response 1.

**Comment Letter 126**

2/17/2024

Denise Vandermeer

**126-1:** The commenter states, “Please do not use public funds to support biogas projects. These projects create more factory farms which produce more climate damage not less.”

**Response:** Please refer to Master Response 1.



**Comment Letter 127**

2/17/2024

KL Johnson

**127-1:** The commenter states, “I understand wanting to make air quality better; however, capturing methane gas from farms would exacerbate another problem which is factory farming of animals. This practice abuses farm animals and increases corporate takeover of family farms of US citizens by Chinese and Brazilian corporations and/or governments.”

**Response:** Please refer to Master Response 1.

**Comment Letter 128**

2/17/2024

Mary (Beth) Jones  
Protect Pomme De Terre

**128-1:** The commenter states, “Pomme de Terre is our local lake and river that is at risk of being polluted with waste water from a BIG BEEF processing facility that thinks they can do whatever they want to our land and water ways with no consequences. In the past year they have found out that we at Protect Pomme de Terre will not stand for it. This California law is ruining our Midwestern aquaphers. They have already destroyed Iowa. We in Missouri sit on one of the biggest and most pristine aquaphers in The country. We will NOT STAND BY AND WATCH FACTORY FARMS DESTROY IT! If California wants to make methane then they should move all the factory farms out there and let them continue to destroy Californians environment. See how the people out there that like that methane also like the mess that creates it.”

**Response:** Please refer to Master Responses 1, 3, and 4.

**Comment Letter 142**

2/18/2024

Ivan Light

**142-1:** The commenter states, “I recommend a number of measures, to wit: Conduct and incorporate a full life cycle assessment of all air pollution and greenhouse gas (GHG) emissions for all pathways, and their implications for environmental justice communities.”

**Response:** Please refer to Master Response 5. The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to cost concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**142-2:** The commenter states, “Eliminate credit generation from factory farm gas projects that would have happened anyway due to other programs or investments.”

**Response:** Please refer to Master Response 1.

**Comment Letter 143**

2/18/2024

Daniel Medrano

**143-1:** The commenter states, “factory farm biogas is unsustainable. it does not reduce the dairy industry’s environmental footprint. In fact, investing in biogas helps maintain and expand factory farms. Investing in biogas means investing in more factory farm pollution”

**Response:** Please refer to Master Response 1.

**Comment Letter 144**

2/18/2024

Norm Sendler

**144-1:** The commenter states, “In other words, while a 24,000 MWH / day natural gas generating station might sit on a half-square mile of land, a similar solar / storage operation would require ~40 square miles of land; obscenely abusive and low Environmental Efficiency.

And that does not include any of the raw material / rare earths mining, production in highly polluting countries such as China, nor the poor performance and accelerated life-time performance degradation.

Then there is the human rights issue, but that might be better captured in a separate category.

The point being there is “no free lunch”; miles and miles of virgin lands and waters are being abused, animals of land, sea and air are being murdered and all for the whimsy of politicians in DC and Davos.

Remember, fossil fuels, such as natural gas, are simply Mother Nature’s stored solar energy; she’s a very clever Lady.”

**Response:** The comment does not raise any specific issues related to environmental impacts associated with the Proposed Amendments. Please refer to Section 4.0 of the Draft EIA for a discussion of the environmental effects associated with the Proposed Amendments. Also please refer to Master Responses 2, 3, 4, and 5.

**Comment Letter 145**

2/18/2024

Chris Gilbert

**145-1:** The commenter states, “Eliminate avoided methane crediting for fuel derived from livestock manure.”

**Response:** Please refer to Master Response 1.

**145-2:** The commenter states, “Oppose Proposed LCFS Amendment Loophole to Allow Petroleum Projects with Carbon Capture & Storage Past the 2040 Phase-out.”

**Response:** The commenter provides an opinion in opposition to carbon capture & storage associated with petroleum projects. The comment does not raise issues related to the adequacy of the Draft EIA and no edits to the Draft EIA are required in response to this comment.

**145-3:** The commenter states, “Eliminate credit generation from factory farm gas projects that would have happened anyway due to other programs or investments.”

**Response:** The commenter provides an opinion in opposition to biogas capture in factory farm. The comment does not raise issues related to the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment. Refer to Master Response 1.

**145-4:** The commenter states, “Conduct and incorporate a full life cycle assessment of all air pollution and greenhouse gas (GHG) emissions for all pathway, and their implications for environmental justice communities.”

**Response:** Please refer to Master Response 5. With regards to comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**Comment Letter 147**

2/18/2024

Pat Lord, Bridgette Hobbs, and Mary Lanis

**147-1:** The commenter states, “California has more industrial dairies than any other state, polluting our rivers, depleting our groundwater, and emitting disastrous greenhouse gasses. Now, factory farm polluters claim they are environmentally friendly because they produce ‘biogas.’ Even worse, they are using our tax dollars to fund this harmful greenwashing.”

**Response:** Please refer to Master Responses 1 and 4.

**147-2:** The commenter states, “Please do all you can to end public funding of factory farms. We are opposed to factory farming of animals especially due to its hideous cruelty to the animals and the polluting effects on our environment.”

**Response:** Please refer to Master Responses 1 and 4.

**147-3:** The commenter states, “California has more industrial dairies than any other state, polluting our rivers, depleting our groundwater, and emitting disastrous greenhouse gasses. Now, factory farm polluters claim they are environmentally friendly because they produce ‘biogas.’ Even worse, they are using our tax dollars to fund this harmful greenwashing.”

**Response:** Please refer to Master Responses 1 and 4.

**Comment Letter 152**

2/19/2024

William Brieger  
Climate Action California

**152-1:** The commenter states, “Crop-based fuels - The Initial Statement of Reasons (ISOR), like the existing LCFS regulation, recognizes that widespread land use change is a potential adverse effect of making fuel from crops. Yet the proposed solution largely ignores the central point: that somewhere in the world, financial incentives for biofuels will stimulate conversion of forest/grassland carbon sinks into new crop land.

In section 95488.9 subd. (g), the proposal requires that a fuel producer using crop- and forest-based feedstocks certify that the feedstock was not grown on specific land forested at any time after 2008. That requirement completely ignores the central concept of land use change, which is that growing enough food to feed the human population is a zero-sum game. This means that growing corn for fuel in Iowa results in the destruction of forest in Brazil to grow more food. Indeed, this is exactly what is happening. The ten-fold expansion of ethanol use in the US in recent years is reflected in expanded corn production on tens of millions of acres just in this country. And that expanded demand for corn, along with other fuel crops, is mirrored by extensive deforestation and planting of crops in the tropics. Under the proposal that would still be allowed. Only one type of land conversion – cutting down a forest to grow fuel crops on the exact same acres – would not be rewarded with LCFS credits.

The Global Trade Analysis Project (GTAP) model that the LCFS currently employs discounts that effect with the explicit assumption that when food crops are diverted to fuel, instead of planting additional acres, people will simply eat less. This is an unproven assumption—that people will watch their family go hungry rather than planting crops or buying food. Given that large uncertainty, the safer assumption is that the world’s growing population will continue to demand food. That is exactly why LCFS recognizes the principles of land use change. The proposed certification process ignores the fact that crops are commodities, grown and sold in a global marketplace.

Most important for the LCFS update, research since the LCFS and GTAP model were adopted, increasingly indicates that emissions from land use change are significantly underestimated. As summarized in a recent brief from Nature Climate Change:

Under current land-use regulation, carbon dioxide emissions from biofuel production exceed those from fossil diesel combustion. Therefore, international agreements need to ensure the effective and globally comprehensive protection of natural land before modern bioenergy can effectively contribute to achieving carbon neutrality.

Furthermore, land use change models used in Europe show that many crop-based renewable fuels have a higher carbon intensity than petroleum fuels. Based on modeling conducted by the LCFS team as part of the 2015 rulemaking<sup>4</sup> as well as in more recent academic research<sup>5</sup>, emissions associated with producing crop-based biofuels are highly uncertain and are likely,



in fact, be greater than fossil fuels on a full life cycle basis. Given the uncertainties with land use change calculations, CARB should wind down crediting for all crop-based fuels by 2030, or sooner. The precautionary principle should apply.

Unwinding of problematic aspects of the LCFS program especially important for fuels that all agree will never aid in the realization of California's long-term vision of carbon neutral transportation. Crop-based liquid fuels support internal combustion (IC), and as such can fairly be viewed as prolonging the use of carbonaceous fuels and IC technology. Regardless of the precise CI, they will never support the deep reductions called for by both statute and the 2022 Scoping Plan Update.

## 2. Waste palm oil

The proposed amendments appropriately forbid fuel derived from palm oil feedstocks, recognizing that palm oil production is associated with significant adverse land use changes. CARB should be wary, however, of producers' claims that certain palm oil is waste. This is an expansive, lucrative end run around the prohibition. CARB does not have the enforcement reach to effectively check claims relating to commodity trades in distant countries; claims that certain oil is a waste product are extremely difficult to verify. Given the great risk of adverse land use change, the regulation should clarify that "derived from palm oil or palm derivatives" includes waste palm oil. That allows for a simple chemical test – in California – for the presence of palm oil.

95482 subd. (f) should be amended to read:

Transportation fuel derived from palm oil or palm derivatives including waste palm oil is ineligible for LCFS credit generation. Any volumes of transportation fuel derived from palm oil or palm derivatives reported through the LCFS program must be assigned the ULSD carbon intensity found in Table 7-1 of the LCFS regulation."

**Response:** Please refer to Master Responses 2, 3, and 5.

**152-2:** The commenter states, "4. Avoided Emissions Crediting - Whenever an enterprise's unregulated emissions are accepted as part of the environmental baseline, the LCFS counts capturing those emissions to produce fuel as "avoided emissions." For example, fuels made with captured methane emissions yield extremely low CI scores, creating an especially lucrative stream of LCFS credits. As a result, a constituency is formed or strengthened against ever regulating the emissions in the first place Consistent with that thinking, landfills outside of California that are too small to be covered by EPA methane capture requirements, but big enough to be included in California's landfill methane regulation, are treated as if they were in California. Out-of-state landfill gas is scored like any other fuel, based on lifecycle emissions. To reward its capture in the first place as "avoided emissions" would make it harder for that other state to ever follow California's lead in controlling landfill methane beyond the federal requirements.

The same logic applies to biogas from dairies. Livestock emissions—both enteric and manure related—could be regulated. By treating all captured methane as “avoided emissions” California is creating an ever-stronger constituency against regulating livestock, which are by far the largest anthropogenic methane source in the state. While captured biogas can be used as a fuel, and earn a CI score better than fossil fuels, it should not be credited with avoided emissions. Such calculations should be phased out by 2025.

Section 95488.9, subd. (f)(3)(A) should be amended to read as follows:

Crediting Periods. Avoided methane crediting for dairy and swine manure pathways as described in (f)(1) above, and for landfill diversion pathways as described in (f)(2) above, is limited to three consecutive 10 years crediting periods, counting from the quarter following Executive Officer approval of the application. The pathway holder must formally request each subsequent crediting period for the project through the LRT-CBTS. Beginning January 1, 2025, the Executive Officer shall not approve or renew any avoided methane crediting for dairy and swine pathways.”

**Response:** Please refer to Master Responses 3 and 5.

**Comment Letter 154**

2/19/2024

Marti Thomas

**154-1:** The commenter states, “There are many negative consequences that come from this illogical and counterintuitive proposal, and here are two of the big ones: Incentivizing by commoditizing factory farm pollution and paying factory farm corporations for the methane they produce would fuel MORE factory farm, causing MORE methane and greenhouse gases, MORE water and air pollution, and MORE corporate consolidation.

This proposal would create additional overproduction of pork and dairy, pushing market prices even further down for independent family farms. Currently, overproduction of pork and dairy and resulting low prices have been devastating for independent family farm livestock producers.

In this climate crisis we must do all we can to protect our land & water resources & the air we breath. Corporate Farms have no interest in doing this, they ravage the land & take all the water then walk away with profits leaving these areas devastated. As well as causing harm to family farmers & we all suffer from their destruction!

Please stop helping them.”

**Response:** Please refer to Master Responses 1, 4, and 5.

**Comment Letter 155**

2/19/2024

Susan Wrasmann

**155-1:** The commenter states, “I will add that so called “green biogas” is anything but. It is methane, a dangerous greenhouse gas that is just as harmful to the atmosphere as the fossil kind. These farms also harm water quality and property values by their concentrated feeding operations production of concentrated odors and runoff. Please deny this misguided attempt to export your own emission through carbon credits. Here’s what it will do: Incentivize more corporate factory farms, harming family farmers, rural communities, and our environment.”

**Response:** Please refer to Master Responses 1 and 4 regarding impacts related to herd sizes of livestock and water pollution. Under CEQA, potential effects related to property values are considered an economic impact and would not constitute an effect (i.e., an impact) on the physical environment. CEQA does not require lead agencies to assess the economic impacts of proposed projects. Therefore, impacts related to property values are not discussed further.

**155-2:** The commenter states, “Commoditize methane production, which would fuel more methane producing practices.”

**Response:** The Proposed Amendments would result in construction of infrastructure needed to collect biogas. The Proposed Amendments aim to capture biogas released from landfills, dairy and swine facilities, food processing companies, and wastewater treatment plants that is otherwise released to the environment. The Proposed Amendments do not encourage the production of biogas.

**155-3:** The commenter states, “Create incentives for the public (taxpayer dollars through government subsidies) to fund anaerobic digesters to capture factory farm gas.”

**Response:** Please refer to Master Response 1.

**Comment Letter 157**

2/19/2024

Jasmin Ansar  
The Climate Center

**157-1:** The commenter states, “Unchecked growth in the biofuel market poses a significant risk of increasing global deforestation, especially as there are limits on waste oil collection and reuse, necessitating expanded production of soy oil and other oil substitutes like palm oil.”

**Response:** Please refer to Master Response 2.

**Comment Letter 163**

2/19/2024

James Duffy  
No Affiliation

**163-1:** The commenter states, “First and foremost, I highly encourage the Board to cap and ultimately phase out the use of crop-based diesel and aviation fuel in California. The use of crops such as corn and soy as feedstock to produce liquid diesel and aviation fuel is not a sustainable means of reducing GHG emissions and may actually increase emissions as compared to fossil fuels. Moreover, using crops to produce biofuels is expensive and exacerbates tropical deforestation and global hunger.”

**Response:** Please refer to the Recirculated EIA and Master Response 2

**163-2:** The commenter states, “Second, rather than simply claiming that all potentially significant impacts are unavoidable, require staff to think creatively and reevaluate which impacts can be mitigated or avoided through LCFS requirements. Throughout the Draft Environmental Impact Analysis (EIA), CARB frequently made the determination that the impacts associated with expected compliance responses are Potentially Significant and Unavoidable. Based on this determination, CARB staff will request that the Board issue a Statement of Overriding Considerations. CEQA places the burden on the approving agency to affirmatively show that it has considered feasible mitigation and alternatives that can lessen or avoid identified impacts through a statement of findings for each identified significant impact. I do not believe that CARB has adequately demonstrated that they have considered feasible mitigation and alternatives that could lessen or avoid several potential impacts on air quality. Moreover, there are several faulty assumptions in CARB’s analysis that result in the overestimation of GHG and air quality benefits of the Proposed Amendments in the Draft EIA. These faulty assumptions also lead to the incorrect conclusion that the Proposed Amendments scenario is more cost effective and provides more air quality benefits than Alternative 1. For further discussion, please see Attachment B.”

**Response:** Please refer to Master Responses 4 and 5.

In accordance with CEQA Guidelines Section 15041, all mitigation must be feasible and fully enforceable, and all feasible mitigation must be imposed by lead agencies. But, if any suggested mitigation is found to be infeasible the lead agency must explain why and support that determination with substantial evidence, presented in their findings and a statement of overriding considerations (State CEQA Guidelines Sections 15091 and 15093).

The EIA identifies potential significant impacts respect to aesthetics, agricultural and forestry resources, air quality, biological resources, cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, mineral resources, land uses, noise, transportation, tribal cultural resources, and utilities and service systems; and develops Mitigation Measures 1-1, 2-1, 2-2, 3-1, 3-2, 4-1, 4-2, 5-1, 7-1, 7-2, -1, 9-1, 9-2, 10-1, 11-1, 12-1, 13-1, 13-2, 17-1, 17-2, 18-1, and 19-1 to mitigation impacts. Where impacts cannot feasibly

be mitigated or where there is uncertainty about implementation of mitigation, the EIA recognizes the impact as significant and unavoidable.

**163-3:** The commenter states, “Third, direct staff to immediately begin a rulemaking for dairy methane. Avoided methane crediting for dairies is unique under the LCFS. No other industry is treated as if their methane pollution is naturally part of the baseline and then lavished with large financial incentives for simply reducing their own pollution. Oil companies are not awarded large LCFS incentives for avoiding methane emissions at oil fields and refineries. Instead, they are regulated and penalized for their emissions. Likewise, landfill operators are not awarded large, avoided methane incentive for capturing methane escaping from landfills, rather they are regulated and required to do so. Excessively rewarding an industry for poor historic environmental performance is troubling in the least and furthermore, doing so only through a transportation fuels program distorts the market against the consideration of less costly and more sustainable methane mitigation options. Every effort should be made to regulate methane emissions from the dairy industry and limit any subsidies to the bare minimum necessary to resolve the problem. As it is, avoided methane crediting for dairies acts as an LCFS offset program, allowing oil companies to generate or purchase large amounts of credits while displacing very little or no fossil fuel.<sup>4</sup> It is no wonder that oil companies are investing heavily in dairy digesters, as it allows them to comply with the LCFS, make a profit doing so, and retain their market share for fossil fuels.”

**Response:** Please refer to Master Response 1.

**163-4:** The commenter states, “Finally, I highly encourage you to follow the recommendation made by Earthjustice to hold a non-voting Board hearing prior to the Board vote. Staff made significant changes to the proposal at the last minute that were not discussed at workshops or informational Board hearings, nor were they included in modeling that staff performed for the ISOR and Draft Environmental Impact Analysis. Moreover, staff have been surprisingly non-transparent in the amount of information included in the rulemaking materials, which is a change from prior LCFS rulemakings. It is so important to provide stakeholders with the opportunity to convince Board members, as a group and in a public setting, to change course prior to the voting meeting. I strongly urge you not to shortcut this process.”

**Response:** Please refer to the Recirculated EIA. Staff also held an additional workshop in April 2024 to discuss the carbon intensity target modeling and the sustainability provisions proposed in the 45-day package, and solicited feedback from stakeholders on those topics. Staff has also publicly released the underlying input and resulting output sheets for the fuels and credit market modeling, as well as the air quality and greenhouse gas workbooks for the Proposed Amendments, for both the Initial Statement of Reasons (ISOR) and the Proposed 15-day amendments, in addition to data underlying the figures in the ISOR.

**163-5:** The commenter states, “Throughout the Draft EIA, CARB frequently makes the determination that the impacts associated with expected compliance responses are Potentially Significant and Unavoidable. Based on this determination, CARB staff will request that the Board issue a Statement of Overriding Considerations. CEQA places the burden on the

approving agency to affirmatively show that it has considered feasible mitigation and alternatives that can lessen or avoid identified impacts through a statement of findings for each identified significant impact. I do not believe that CARB has adequately demonstrated that they have considered feasible mitigation and alternatives that could lessen or avoid several potential impacts on air quality and agricultural and forest resources.”

**Response:** This is an introductory comment. See responses to subsequent comments with regard to specific items brought up by the commenter.

**163-6:** The commenter states, “Trucking of biofuel feedstock and finished product, trucking of manure or food and green waste to a centralized digester, trucking of biomethane from digesters to the pipeline injection point, trucking of hydrogen from production facilities to dispensing stations, and trucking of carbon dioxide from the capture facility to the sequestration point are all reasonably foreseeable compliance responses resulting in local air quality impacts. As an example, the conversion of the Paramount refinery to renewable diesel production by World Energy results, by their own calculations, in an estimated 125 tpy increase of NOx emissions for transport of feedstock and finished product.<sup>33</sup> These emissions could be mitigated by requiring these LCFS participants to use zero emission trucks as a condition for generating credit.”

**Response:** Please refer to Master Response 4 with regard to the air quality analysis conducted in support of the Proposed Amendments, and responses to comments 299-16, 299-18, 313-3 and R16-8 with regard to mitigation measures and analysis of alternatives.

**163-7:** The commenter states, “Converting biogas to electricity using internal combustion generators is a reasonably foreseeable compliance response resulting in local air quality impacts that could be avoided by requiring LCFS participants to use non-combustion alternatives such as fuel cell generators as a condition for generating credit. In fact, CARB staff in the air quality calculations assumed that dairy electricity projects would use fuel cells even though the regulation does not require it. I suggest making it official.”

**Response:** The Proposed Amendments provide a new opportunity for book and claim of biomethane to produce electricity, if that electricity is generated using a fuel cell. This provision incentivizes use of the cleanest, non-combustion technology available for conversion of biomethane to electricity, which supports the assumption in the air quality analysis that biomethane to electricity pathways would utilize fuel cell technology. Please also refer to Master Response 4 with regard to the air quality analysis conducted in support of the Proposed Amendments, and responses to comments 299-16, 299-18, 313-3 and R16-8 with regard to mitigation measures and analysis of alternatives.

**163-8:** The commenter states, “Continued siting of new fuel production facilities in overburdened communities is a reasonably foreseeable compliance response which exacerbates entrenched air quality problems that could be avoided by requiring LCFS



participants to site all new production facilities in locations receiving a CalEnviroScreen score of “X” or lower as a condition for generating credit.”

**Response:** Please refer to Master Response 4 with regard to the air quality analysis conducted in support of the Proposed Amendments, and responses to comments 299-16, 299-18, 313-3 and R16-8 with regard to mitigation measures and analysis of alternatives.

**163-9:** The commenter states, “Continued methane leaks from dairy digester projects are reasonably foreseeable and could be avoided by requiring LCFS participants to employ periodic leak detection and repair at digester facilities and transport equipment.”

**Response:** Please refer to Master Responses 1 and 4 with regard to livestock methane crediting and the air quality analysis conducted in support of the Proposed Amendments, and responses to comments 299-16, 299-18, 313-3 and R16-8 with regard to mitigation measures and analysis of alternatives.

**163-10:** The commenter states, “Increasing dairy herd size to generate additional LCFS credit is a reasonably foreseeable compliance response resulting in local air quality impacts that could be mitigated by capping avoided methane credit based on the historic herd size before initial LCFS certification.”

**Response:** Please refer to Master Response 1 with regard to livestock methane crediting, and responses to comments 299-16, 299-18, 313-3 and R16-8 with regard to mitigation measures and analysis of alternatives.

**163-11:** The commenter states, “Increased biofuel feedstock production is a reasonably foreseeable compliance response resulting in land use change and global hunger impacts that are not being mitigated or avoided by the existing land use change CI penalty. Future impacts could be avoided by placing a cap on use of crop-based feedstocks to produce biofuels.”

**Response:** Please refer to Master Response 2 with regard to sustainability guardrails included in the Proposed Amendments, and responses to comments 299-16, 299-18, 313-3 and R16-8 with regard to mitigation measures and analysis of alternatives.

**163-12:** The commenter states, “The Board should require staff to take a step back and think creatively when determining which potentially significant impacts can be mitigated or avoided rather than simply claiming that all impacts are unavoidable.”

**Response:** Please refer to response to comment 299-16 regarding mitigation measures. **163-13:** The commenter states, “Moreover, there are several faulty assumptions in CARB’s analysis that result in the overestimation or inaccurate portrayal of GHG and air quality benefits of the Proposed Amendments. These faulty assumptions also lead to the incorrect conclusion

that the Proposed Amendments scenario is more cost effective and provides more air quality benefits than Alternative 1.”

**Response:** This is an introductory comment. See responses to subsequent comments with regard to specific items brought up by the commenter.

**163-14:** The commenter states, “CARB staff are not using the latest data on tailpipe PM emissions from vehicles consuming renewable diesel. The ISOR and Draft EIA attribute health benefits to increased use of renewable diesel in California, especially associated with reduced PM<sub>2.5</sub>. This is based on a 2011 analysis, and ignores a more recent 2021 study prepared for CARB that looks at the NO<sub>x</sub> and PM from Biodiesel and Renewable Diesel Emissions in Legacy and New Technology Diesel Engines. The key finding in this more recent study is that air quality benefits from older engines are not observed in new technology diesel engines, which are now required in California for the on-road fleets. This undercuts one of the main justifications offered to reject limits on renewable diesel and results in an inaccurate portrayal of the criteria pollutant emission benefits of the proposed amendments in the Draft EIA. Ironically, because renewable diesel does offer PM reductions in older trucks that are still in use elsewhere in the US, concentrating most of US renewable diesel in California does not help Californians but it does harm others across the United States, many of whom reside in overburdened communities. A large percentage of renewable diesel currently consumed in California originates from a region of Louisiana known as Cancer Alley. Residents of Cancer Alley suffer from the additional pollution emitted by newly constructed or expanded renewable diesel refineries but do not benefit from the reduced tailpipe emissions that would occur if the renewable diesel were consumed locally instead of being shipped to California.”

**Response:** See response to comment R22-14 and Master Response 4 with regard to the emissions analysis for biodiesel and renewable diesel.

**163-15:** The commenter states, “CARB incorrectly attributes 100 percent of the GHG emission reductions associated with consuming biofuels to the LCFS. Setting aside the argument that the CI values CARB calculates for crop-based biofuels are highly uncertain and likely significantly underestimated, CARB staff have changed the assumptions they use in attributing GHG emission reductions to the LCFS for biofuel. In the rulemaking for the 2018 amendments (see Attachment F page F-14), staff acknowledged that the federal Renewable Fuel Standard (RFS) and Biodiesel Blenders Tax Credit are primarily responsible for driving the production of biofuels. Through its design, the RFS essentially creates a volume mandate for biofuels, and therefore the total volume produced in the United States is effectively fixed by the RFS. In other words, if the LCFS ended today, the same amount of biofuel would be produced in the US. Because of this, the LCFS subsidy does not result in more production of biofuel beyond that incentivized by the RFS and blenders tax credit, but rather provides incentive to incrementally reduce the CI and shuffle the lowest CI production to California. Under the RFS, corn ethanol is required to achieve a 20 percent CI reduction and biomass-based diesel is required to achieve a 50 percent CI reduction to qualify for the subsidy. Therefore, in the 2018 LCFS rulemaking, staff gave credit to the federal programs for a CI reduction of 20 percent for corn ethanol and 50 percent for biomass-based diesel, and only gave credit to the LCFS for CI

reduction in excess of these values. For example, under these more appropriate assumptions, the LCFS took some credit for lower CI of fuels made from used cooking oil and tallow which have CI reductions of about 60 to 80 percent but took no credit for emission reductions from fuels made from soy and canola oil which have CI reductions of about 50 percent. Conversely for the 2024 amendments, staff appears to be crediting the LCFS for the full CI reduction (see page 38 of ISOR), effectively ignoring the contribution of the federal programs. This change in assumption results in an overestimation of the GHG benefits of the Proposed Amendments scenario in the Draft EIA.”

**Response:** See Master Response 5 with regard to quantification of greenhouse gas emissions for the Proposed Amendments.

**163-16:** The commenter states, “CARB staff makes a flawed assumption that inflates the GHG and criteria pollutant benefits associated with displacing fossil diesel. In the GHG and air quality analysis presented by CARB, staff assume that a reduction in the consumption of fossil diesel in California will result in a proportional reduction in oil production in California. Staff then attribute the reduced criteria pollutant and GHG emissions associated with the oil production decline to the LCFS (see page B-1 of the SRIA for equations). I see several issues with this logic.

First, CARB totally disregards the fact that crude production in California is in terminal decline and has been for the past 40 years (see page 7). CARB’s calculations assume a static baseline at 2019 crude production levels, rather than a dynamic baseline that accounts for the long-term historical rate of decline in production. In other words, CARB assumes that crude production in California would remain constant at 2019 levels without CARB regulations, when it will likely decline to near zero by 2045 based exclusively on naturally declining production from quickly maturing oil fields. If we want to understand the benefits or costs of an action or regulation, it should be measured against counterfactual case where the action or regulation did not happen. In either world, California oil production is dropping.

Second, even if CARB properly assumes a declining baseline for the calculations, I don’t see evidence for a relationship between California oil production and fossil fuel demand in California, especially given the fact that California crude makes up only 25 percent of oil supply to California refineries. Changes to the “rate of oil production decline” in California are largely the result of global oil price, California wholesale NG price, and approval of new well drilling. In other words, California oil production declines more rapidly when global crude prices are low and NG prices are high, and oil production declines less rapidly when crude prices are high and NG prices are low.<sup>34</sup> Changes in California fossil fuel demand will not significantly affect this dynamic because these changes are too small to significantly affect global oil prices. California refineries will much more likely respond to reduced demand for fossil fuels by reducing crude imports first, as is clearly evident by dramatically reduced imports during the pandemic (see the LCFS Dashboard Figure 8 which shows that imports of crude oil declined by nearly 100 million barrels between 2019 and 2020 while California production declined by only 6 million barrels). Moreover, if there were a link between California crude production and fossil fuel demand in California, one would expect to see California crude production increase

after the pandemic in response to the rebound in gasoline and diesel consumption. Instead, California crude production continued its relatively steady annual decline and imported crude volume increased.

Third, CARB is assuming that a reduction in fossil fuel demand will result in a proportional reduction in refining capacity in California. Although this is probably the strongest assumption CARB makes, it is in no way assured. California refiners may simply respond to reduced demand in California by exporting excess production, especially given the legal fights and costs associated with cleanup that will ensue after shutdown. In other words, will California refineries continue to operate and sell barely profitable fuels to satisfy increasing consumption in Asia or will they shut down and incur extremely expensive cleanup costs?"

**Response:** See response to comment 15.1-65-1.

**163-17:** The commenter states, "CARB staff is significantly underestimating criteria pollutant emissions at renewable diesel, renewable gasoline, and sustainable aviation fuel production facilities. Staff assumes that these facilities have similar emissions to a simple oil refinery and estimate emission factors of 0.058 and 0.022 tons per million DGE for NOx and PM2.5 emissions respectively.<sup>35</sup> Environmental Impact Reports for the AltAir and Phillips 66 refinery conversions indicate emission factors of 3 to 4 times these values. For the AltAir facility, data indicates emission factors of 0.152 and 0.090 tons per million DGE for NOx and PM2.5 emissions respectively.<sup>36</sup> For the Phillips 66 facility, data indicates emission factors of 0.249 and 0.082 tons per million DGE for NOx and PM2.5 emissions respectively. <sup>37</sup>"

**Response:** See response to comment R17-5. Staff based production emissions analysis on real-world data from the California Emissions Inventory Data Analysis and Reporting System (CEIDARS), and at the time of the analysis the facilities described by the commenter had no available real-world emission data. Even if staff were to use the suggested emission factors, the Proposed Amendments would still result in net emissions reductions for both NOx and PM.

**163-18:** The commenter states, "CARB staff assume that all future dairy to electricity projects will use fuel cell electric generators even though there is no requirement that project operators use fuel cells rather than combustion generators.<sup>38</sup> This assumption results in extremely low NOx and PM2.5 emission factors for these projects and therefore underestimates potential emissions."

**Response:** See response to comment 163-7.

**163-19:** The commenter states, "As discussed previously, CARB appears to be allowing future CCS and DAC projects to receive LCFS credit for emission reductions that will also be sold to other entities in the voluntary carbon market and/or through the marketing of zero-emission crude oil. If this is the case, the GHG emission reductions claimed for the LCFS in the Draft

EIA are significantly overestimated as the same emission reductions are also being sold to parties not participating in the LCFS.”

**Response:** The commenter’s conclusion that staff are overestimating CCS and DAC-related emissions reductions under the Proposed Amendments is speculative. At this time, there are no carbon dioxide removal projects certified for participation or receiving credits under the LCFS. It is speculative to claim that potential future projects would receive credits under the LCFS program and count toward California’s greenhouse gas inventory, while also being sold on the voluntary market. Although the LCFS program does not contain a general additionality requirement, and does explicitly permit stacking with other incentive programs in certain circumstances, CARB takes great pains to uphold the integrity of greenhouse gas accounting for both the State inventory and the LCFS program, and supports the adoption of carbon dioxide removal technologies, which will play a key role in achieving the State’s greenhouse gas emissions reductions targets.

**163-20:** The commenter states, “The net result of all these assumptions is that CARB is significantly overestimating the criteria pollutant and GHG reduction benefits associated with biofuel production and consumption, dairy electricity projects, as well as CCS and DAC projects, which results in an inaccurate portrayal of the benefits of the amendments in the Draft EIA.”

**Response:** This is a conclusory statement based on previous comments made in the letter. See responses to comments 163-1 through 163-19.

**163-21:** The commenter states, “Finally, CARB did not update the CATS model, rerun the Proposed Amendments scenario, and update the economic and air quality analyses between the submission of the SRIA to DOF in September and release of the rulemaking package in January.<sup>39</sup> During this period, a few changes were made to the proposed amendments. The most significant of these changes were to grandfather all pre-2030 dairy and swine projects from the proposed phaseout of avoided methane and to grandfather all pre-2030 RNG projects from the proposed deliverability requirements. Therefore, the economic and air quality analyses presented in the ISOR and Draft EIA do not reflect the actual LCFS amendments proposal.”

**Response:** Staff updated the CATS modeling for the release of the 1<sup>st</sup> proposed 15-day changes to the LCFS regulation, and subsequently issued a recirculated Draft EIA with further information related to the updated project description and potential compliance responses.

**Comment Letter 172**

2/19/2024

Jim Stewart

**172-1:** The commenter states, “Conduct and incorporate a full life cycle assessment of all air pollution and greenhouse gas (GHG) emissions for all pathways, and their implications for environmental justice communities.”

**Response:** Please refer to Master Response 5. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**172-2:** The commenter states, “Eliminate credit generation from factory farm gas projects that would have happened anyway due to other programs or investments.”

**Response:** The commenter provides an opinion in opposition to biogas capture in factory farm. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. Please refer to Master Response 1.

**172-3:** The commenter states, “Include intrastate jet fuel as a deficit generator and include California’s share of the fuel used in interstate and international flight.”

**Response:** The comment suggests inclusion of intrastate jet fuel as deficit generator and inclusion of California’s share of the fuel used in interstate and international flights. The comment does not raise issues related to the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment.

**Comment Letter 175**

2/20/2024

Charles Davidson  
Sunflower Alliance

**175-1:** The commenter states, “3. Inadequate CARB Oversight: The refineries’ claims have been locally approved without sufficient scrutiny, despite public comment on these matters. The mere fact of CARB not auditing these GHG-related discrepancies in LCFS qualification scoring, highlighting critical oversight in CARB’s lifecycle GHG assessment capabilities for renewable diesel projects dependent on substantial GHG-reduction subsidies.”

**Response:** Please refer to Master Response 5.

**175-2:** The commenter states, “Implement Rigorous GHG Accounting: It’s imperative to introduce stringent, project-specific GHG accounting, hydrogen accounting and auditing measures to ensure the veracity of claimed environmental benefits and prevent greenwashing.”

**Response:** The comment suggests implementation of rigorous GHG accounting to ensure the veracity of claimed environmental benefits and prevent greenwashing. The comment does not raise issues related to the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment.

**Comment Letter 179**

2/20/2024

Kim Dupre

**179-1:** The commenter states, “I’m speaking today as a resident of rural American, one who has lived in the shadow of factory farms and biogas digesters. Despite all the promises from DNR, local elected officials, and experts over the years that this farm/biogas digester wouldn’t hurt our water quality or way of life....that has not aged well in Emerald, Wisconsin.

I watched several in my neighborhood lose their drinking water – the Town Hall’s well which originally had nitrates at 6.9 ppm just a few years ago – now has nitrates consistently near 40 ppm and has spiked to 52 and 62 ppm.

This farm keeps getting larger. We’ve seen the implementation of biogas digesters become a rationale for increasing herd sizes....yet our drinking water is not getting cleaner – but actually much worse. The biogas digester exploded and burned up after a few years and wasn’t replaced, but the damage was already done, and our water has not improved.

My neighbors watched the nitrates rapidly increase over the same time in their private wells, many of which don’t drink their water anymore – some won’t even give it to their pets. Well drillers have said “we can dig you a well, but we can’t guarantee you drinkable water.” One neighbor experienced that firsthand when selling his home – a new well 200 feet deep well was still testing at 17 ppm for nitrates. He had to install a reverse osmosis system to get the property sold – but then the new family, with small children, moved away within a year because they were concerned about the water quality.

E. coli has also been found in several wells in our neighborhood over the years – which made turning on my faucet every day a “crap shoot” in my mind. That led to the heartbreaking decision my husband and I finally made to leave our acreage in Wisconsin for safer spaces in Minnesota – a place where we can drink the water and serve it to family and friends without fear.”

**Response:** Please refer to Master Responses 1, 3, and 4.

**179-2:** The commenter states, “Clean water is the only driver of economic development in rural areas. No one wants to locate a home, subdivision, or business if clean drinking water is not available. To incentivize manure production over milk production is damaging to our environment. There is no way our soils can absorb that concentrated nutrient load from digestate when they are already 5-6x higher in phosphorus than what is recommended by University of Wisconsin for growing crops. TMDLs are common in many agricultural parts of Wisconsin – green rivers, streams, and lakes by the 4<sup>th</sup> of July. Nitrates in groundwaters are still rising per a 10-year study in St. Croix County, Wisconsin.”

**Response:** Please refer to Master Responses 1, 3, and 4.



**Comment Letter 180**

2/20/2024

Neil Koehler  
Renewable Fuels Association

**180-1:** The commenter states, “Science informs us that time is of the essence to achieve maximum GHG reductions now. E15 is the leading opportunity under the LCFS to immediately and significantly further reduce GHG emissions while at the same time reducing criteria pollutant emissions and consumer costs.”

**Response:** This comment is not responsive to the LCFS amendments and is not within the scope of this rulemaking. California’s fuel specifications for reformulated gasoline regulate the blend of ethanol that may be used in California, rather than the LCFS.

**Comment Letter 190**

2/20/2024

Jordan Garfinkle  
Bloom Energy

**190-1:** The commenter states, “Over the past several years, research has shown that local combustion-related air pollutants are far more harmful to human health and the environment than previously understood. Some key findings that demonstrate the need for clean energy programs to value these impacts include:

- Combustion related air pollution may be as harmful to human lungs as smoking cigarettes;
- Combustion related air pollution increases preterm birth risk;
- Particulate matter (PM) is the largest environmental health risk factor in the nation, and the resulting health impacts are borne disproportionately by disadvantaged communities.”

**Response:** Please refer to Master Response 4 and the Recirculated EIA.

**Comment Letter 191**

2/20/2024

Krysta Wanner  
Western Propane Gas Association

**191-1:** The commenter states, “There would be a significant air quality benefit to transitioning from fuels with significant air emissions like CARBOB (California gasoline blend), natural gas, and diesel to the no-SOx, no-black-carbon, and ultra-low-NOx solution of renewable propane. To meet 2022 Scoping Plan goals and other emission reduction mandates such as the State Implementation Plan (SIP), renewable propane serves as the bridge fuel to meet timeline goals in fuel sectors where using electric technology is not yet affordable nor feasible. It is the perfect fuel for hard to decarbonize areas and sectors of the state, like off-road and heavy-duty transportation. Renewable propane can be prioritized in underserved communities where electric infrastructure is not afforded to them or where service is intermittent due to power shutoffs or natural disasters.”

**Response:** The comment provides an opinion on the air quality benefit of renewable propane. The comment does not raise issues related to the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 193**

2/20/2024

Lisa Whelan  
Iowa Citizens for Community Improvement

**193-1:** The commenter states, “The current flaws in the LCFS, such as “avoided methane crediting” and inaccurate life cycle assessments, not only enable pollution but disproportionately harm low-income communities and communities of color. Factory farms, predominantly situated in these marginalized areas, inflict severe damage on air, water, public health, rural economies, and overall quality of life.”

**Response:** Please refer to Master Responses 1, 4, and 5.

**193-2:** The commenter states, “Turning Iowa factory farms into sources of credits to offset California transportation fuel emissions will inevitably generate more incentives to increase more manure which will further degrade our communities and water quality.”

**Response:** Please refer to Master Responses 1 and 4.

**193-3:** The commenter states, “We also ask that, at a minimum, you amend the LCFS to correct the over-valuation of manure-based credits to include all climate pollution associated with the factory farm system and ensure that credits from non-additional reductions do not continue.”

**Response:** Please refer to Master Response 1.

**Comment Letter 201**

2/20/2024

Nancy Pauken

**201-1:** The commenter states, “What we need to stop is pollution, whether it be from private jets, yachts, McMansions, golf courses, the military, industry and factory farming.”

**Response:** Please refer to Master Response 1.

**Comment Letter 209**

2/20/2024

Catherine Garoupa  
EJAC

**209-1:** The commenter states, “Conduct and incorporate a full life cycle assessment of all air pollution and greenhouse gas (GHG) emissions for all pathways, and their implications for environmental justice communities.”

**Response:** Please refer to Master Response 5. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**209-2:** The commenter states, “Conduct a full accounting of GHG and air pollution emissions associated with pathways relying on the production of fuel from livestock and dairy manure.”

**Response:** Please refer to the Recirculated EIA and Master Responses 1 and 5.

**Comment Letter 215**

2/20/2024

Nataley Williams  
CATF

**215-1:** The commenter states, “Farming Management Practices. There are uncertainties about the current LCFS policy’s impacts on farming management practices, such as the risk of subsidies accelerating the rate of consolidation of livestock herds, driving an increase in herd size, and leading to changes in manure management practices. CARB has publicly stated that it has a lack of evidence that the implementation of LCFS is contributing to dairy farm consolidation and increased herd size. However, the UC Davis analysis referenced by CARB used a “cows per farm” statistic, and the study’s author advises that further analysis using data from the USDA’s Census of Agriculture (released in February 2024) would be better to answer this question. Furthermore, because LCFS subsidies benefit dairies outside of California, analysis of the impacts on farming management practices should also consider farms outside the state.”

**Response:** The USDA’s Census of Agriculture provides data related to number of farms by size and type, inventory and values for crops and livestock, and producer characteristics. These data do not provide evidence that the implementation of LCFS is contributing to dairy farm consolidation and increased herd size. Dairy farm consolidation can be influenced by many interconnected factors, such as costs, farming practices, labor availability, and cropping patterns. Because of the complexity of the subject, it is difficult to predict the impacts of the LCFS related to dairy farm consolidation and increased herd size. Please refer to the Recirculated EIA and Master Responses 1 and 3.

**215-2:** The commenter states, “Increased Methane Emissions. Some changes in manure management, such as transitioning from land application to long-term storage, may increase methane emissions. In addition, increases in herd sizes may also lead to an increase in methane from enteric emissions. Critically, enteric emissions are currently not included in the LCFS’s lifecycle emissions analysis for biomethane from manure. While CARB does not account for these upstream emissions, if there is an increase in enteric emissions as a direct effect of LCFS policy, progress toward meeting the SB 1383 target for livestock methane emissions reductions may be negatively affected.”

**Response:** Please refer to Master Responses 1, 2, and 5.

**215-3:** The commenter states, “CARB should ensure that the final rulemaking documents explicitly provide for the possibility of adjusting crediting periods for avoided methane if future research or data indicates that the LCFS is leading to negative climate consequences such as additional methane emissions (e.g., from enteric or digestate management due to changes in farm management practices) or negative health consequences.”

**Response:** Please refer to Master Responses 1 and 5.

**215-4:** The commenter states, “CARB should account for potential unintended increases in emissions at the farm level (from manure management and/or digestate management) and potential risk to accelerate rate-of-farm consolidation in the amendment Appendix D, attachment B, Summary of Environmental Impacts and Mitigation Measures. The goal is to have these issues clearly mapped by CARB and added to the broader discussion of reduction in methane emissions from the dairy sector.”

**Response:** Please refer to Master Response 1 and 5.

**215-5:** The commenter states, “Without adequate safeguards, strengthening and extending LCFS carbon intensity benchmarks will likely accelerate the rapid growth in demand for bio-oil based biofuels, directly and indirectly impacting food markets and increasing emissions from land use changes.”

**Response:** Please refer to Master Response 2.

**215-6:** The commenter states, “Including intrastate fossil jet fuel in the LCFS is an important policy signal for decarbonizing the aviation sector, but the current proposal will further increase demand for bio-oil based fuels, given that refining and hydrotreating bio-oils is currently the only commercially viable alternative to fossil jet fuel at scale.”

**Response:** Please refer to the Recirculated EIA and Master Response 2. In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet.

**215-7:** The commenter states, “The only proposed sustainability requirement for crop-based biofuels is third-party certification that the feedstocks are derived from land that has not been forested since 2008, which is too narrowly scoped to serve as an effective constraint on climate-damaging land use change.”

**Response:** Please refer to Master Response 2.

**Comment Letter 216**

2/20/2024

Kyle Whitmore  
Union of Concerned Scientists

This letter includes several letters from individuals with the Union of Concerned Scientists. Each letter containing an environmental related comment is respond to as an individual comment below.

**216-1:** The commenter states, “As a California resident, I believe it is critical that California does not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-2:** The commenter states, “As a California resident, I believe it is critical that California not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-3:** The commenter states, “As a Senior living in Los Angeles, I'm writing to express my concern and to provide input on the proposed amendments to the Low Carbon Fuel Standard (LCFS). As a California resident, I believe it is critical that California does NOT rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses SIGNIFICANT tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-4:** The commenter states, “I believe that the most effective way to effect carbon in the atmosphere is a carbon tax with proceeds divided equally to every man woman and child plus a border tax of the same magnitude on products from other countries that do not have a carbon tax. Even with that, we need every known measure and some as yet unknown, to be instantly applied. Hence I am writing to provide input on the most effective way to support the proposed to amendments to the Low Carbon Fuel Standard (LCFS). As a California resident, I believe it is critical that California does not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-



based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-5:** The commenter states, “As an American citizen and taxpayer and long-time health care provider I am deeply concerned and desire to provide input on the proposed amendments to the Low Carbon Fuel Standard (LCFS). As a California resident, I believe it is critical that California does not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-6:** The commenter states, “I am a proud and happy electric vehicle owner. The whole thing thrilled me so much, I ditched my gas-powered lawnmower and bought a cordless electric mower. I went green in areas where it is obtainable for most. I will address the rest of my living space as appliances die. Now, I see that somehow soybean oil diesel has made the cut as environmentally friendly. What! This is far from the truth, so I am writing to express my concern and to provide input on the proposed amendments to the Low Carbon Fuel Standard (LCFS). As a California resident, I believe it is critical that California does not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-7:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification. Let’s be smart(er) with our ‘science.’”

**Response:** Please refer to Master Response 2.

**216-8:** The commenter states, “Regarding the proposed amendments to the Low Carbon Fuel Standard (LCFS): Allowing a large increase in vegetable-oil-based diesel will result in deforestation due to a greater market for imported vegetable oil. Deforestation harms the environment by both disrupting the forest ecosystem and by contributing to global warming. In addition, diverting vegetable oil to use as fuel instead of food risks impacting food security in vulnerable communities.”

**Response:** Please refer to Master Response 2.

**216-9:** The commenter states, “Soybean based diesel oil is causing environmental harm. I am writing to express my concern and to provide input on the proposed amendments to the Low Carbon Fuel Standard (LCFS). As a California resident, I believe it is critical that California does not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-10:** The commenter states, “IMMEDIATELY PLACE CAP ON VEGETABLE OIL-BASED FUELS! I am writing to express my concern and to provide input on the proposed amendments to the Low Carbon Fuel Standard (LCFS). As a California resident, I believe it is critical that California does not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-11:** The commenter states, “The production of soybean oil creates a significant amount of greenhouse gas emissions and is therefore not an effective alternative to petroleum. I am writing to express my concern and to provide input on the proposed amendments to the Low Carbon Fuel Standard (LCFS). As a California resident, I believe it is critical that California does not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-12:** The commenter states, “I am a mother and a grandmother who is very concerned about the future of our environment. I am writing to express my concern and to provide input on the proposed amendments to the Low Carbon Fuel Standard (LCFS). As a California resident, I believe it is critical that California does not rely on soybean oil-based diesel to reach our ambitious yet responsible environmental standards. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The flood of vegetable oil-based diesel in California also undermines the support the LCFS provides for transportation electrification.”

**Response:** Please refer to Master Response 2.

**216-13:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-14:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-15:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-16:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-17:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-18:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-19:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-20:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-21:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-22:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-23:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-24:** The commenter states, “Moving vegetable oil from food to fuel poses major environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-25:** The commenter states, “Diverting vegetable oil from food to fuel poses significant climate impacts and environmental harm through tropical deforestation and increased demand for ag land.”

**Response:** Please refer to Master Response 2.

**216-26:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-27:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation!”

**Response:** Please refer to Master Response 2.

**216-28:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-29:** The commenter states, “Diverting vegetable oil from food to fuel poses some very significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-30:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-31:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation. The unprecedented expansion and magnitude of soybean oil-based diesel used in California is harming people, accelerating tropical deforestation, and undermining the state's climate policies.”

**Response:** Please refer to Master Response 2.

**216-32:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-33:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-34:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-35:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-36:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-37:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-38:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-39:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-40:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-41:** The commenter states, “The key is that the market in California is so large, if we require this, the rest of the country will follow and in time, the world. Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-42:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-43:** The commenter states, “Shunting vegetable oil from food to fuel causes significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-44:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-45:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-46:** The commenter states, “soybean oil-based diesel will produce carbon dioxide and other greenhouse and polluting byproducts when combusted. That’s elementary chemistry. More CO<sub>2</sub> in the atmosphere is increasing the risk of catastrophic climate disruption.”

**Response:** Please refer to Master Response 2 and 4.

**216-47:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-48:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-49:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-50:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-51:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-52:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-53:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical DEFORESTATION.”

**Response:** Please refer to Master Response 2.

**216-54:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-55:** The commenter states, “Diverting vegetable oil from food to fuel is not sustainable. It poses significant environmental harm through tropical deforestation and the cost and energy required to import soybean oil from afar.”

**Response:** Please refer to Master Response 2 regarding impacts related to land use and deforestation.

The EIA concludes that implementation of the Proposed Amendments would result in less-than-significant energy impacts, including impacts related to increased transportation of finished alternative fuels to blending terminals or retail fuel sites. Please refer to Section 4.B.6, “Energy,” of the Draft EIA (pages 76 through 79) for a discussion of energy impacts related to

the Proposed Amendments. Cost is not considered an environmental effect that requires analysis under CEQA. No further response related to cost is provided.

**216-56:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-57:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-58:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-59:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-60:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-61:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-62:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-63:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-64:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”



**Response:** Please refer to Master Response 2.

**216-65:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-66:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-67:** The commenter states, “Diverting vegetable oil from food to fuel poses significantly severe environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-68:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-69:** The commenter states, “It is worse than counterproductive for CARB policy to encourage the razing of tropical forests to grow vegetable oil for transportation fuel, as deforestation is a major driver of the climate crisis.”

**Response:** Please refer to Master Response 2.

**216-70:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-71:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation and the resulting loss of carbon sequestration and loss of important wildlife habitat.”

**Response:** Please refer to Master Response 2.

**216-72:** The commenter states, “Diverting vegetable oil from food to fuel poses environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-73:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-74:** The commenter states, “Using vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-75:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-76:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-77:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-78:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-79:** The commenter states, “The CO<sub>2</sub> emissions from planting, fertilizing, harvesting, shipping and processing biofuels are far greater than the slight decrease in the emissions from burning.”

**Response:** The comment provides an opinion regarding the carbon dioxide emissions from planting, fertilizing, harvesting, shipping, and processing biofuels but does not provide evidence to support the claim. The comment does not raise issues related to the adequacy of the environmental analysis, and no edits to the Draft EIA are required in response to this comment. Please refer to Section 3.A.2, “Greenhouse Gas Emissions,” of the Recirculated EIA for a discussion of greenhouse gas emissions impacts resulting from implementation of the Proposed Amendments.

**216-80:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-81:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-82:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-83:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-84:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-85:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-86:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-87:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-88:** The commenter states, “Diverting vegetable oil from food to fuel IS A SIGNIFICANT HARM VIA tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-89:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-90:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-91:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-92:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-93:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**216-94:** The commenter states, “Diverting vegetable oil from food to fuel poses significant environmental harm through tropical deforestation.”

**Response:** Please refer to Master Response 2.

**Comment Letter 217**

2/20/2024

Molly Armus  
Friends of Earth

**217-1:** The commenter states, “LCFS is driving the demand for manure biogas — or “factory farm gas” — by allowing concentrated animal feeding operations (CAFOs), or factory farms, to generate credits from installing and operating anaerobic digesters that can be sold to companies to pay for their pollution. It creates a perverse incentive for CAFO operators to generate as much methane — and therefore as much manure — as possible to capitalize on these hefty subsidies the program provides. As a result, the LCFS is exacerbating existing pollution and failing to mitigate animal agriculture’s climate impacts by driving the growth of both factory farms and factory farm gas production across the United States.”

**Response:** Please refer to Master Responses 1 and 3.

**217-2:** The commenter states, “Industrial Animal Agriculture’s Environmental & Health Impacts on Communities Industrial animal agriculture operations are a major polluter of the rural communities in which they are located, which are disproportionately communities of color and low-wealth communities such as California’s San Joaquin Valley. Today’s industrial-scale farms, housing thousands — or sometimes hundreds of thousands — of animals, generate as much as 1 billion tons of manure per year, which contaminates air, drinking water, and surface waters, directly impacting the health of the surrounding communities.

Manure from industrial dairy and hog operations, the main beneficiaries of LCFS’ incentives, is typically stored as liquid in giant manure lagoons and periodically applied to spray fields and contains pathogens, antibiotic-resistant bacteria, and heavy metals. The sprayed, untreated waste can contaminate the soil and run off into waterways, causing harmful downstream effects. The manure also emits hazardous gases and particulate matter, causing toxic air emissions and noxious odor. Studies have shown that people living near factory farms face higher risk and severity of respiratory illnesses, digestive issues, headaches, and other serious health conditions.

As mentioned above, these negative impacts disproportionately affect low-income communities and communities of color because of where CAFOs operate. One study found that of the 15,900 deaths from food production in the U.S., 80 percent, or 12,700 deaths, are attributable to industrial animal production, and the majority of deaths — 12,400 deaths each year — are attributable to ammonia acting as a PM2.5 precursor. Environmental justice communities face a so-called “triple jeopardy” where their proximity to sources of air pollution, disproportionate disease burdens, and psychosocial stressors compound to diminish their quality of life.

In addition to being a major polluter of rural communities, animal agriculture is the top source of U.S. climate changing methane emissions, accounting for 36% of total U.S. methane emissions. Climate change also disproportionately affects communities of color, low-income

communities, and other vulnerable populations, which are more likely to live in isolated rural areas, floodplains, coastlines, and other at-risk locations, putting them at risk of exposure to adverse climate change impacts and compounding the harm inflicted by factory farm pollution.

Ultimately, the state of California should be doing so much more to protect these long-suffering communities from both industrial pollution and climate change. The very least it could do is stop rewarding the perpetrators.

#### Factory Farm Gas Production Fails to Address Environmental and Health Impacts on Communities and Creates New Problems

Not only does producing factory farm gas fail to address the aforementioned public health and safety concerns of communities, producing factory farm gas also generates additional environmental, public health, and safety concerns for communities living near CAFOs and biogas plants. These include increased production of ammonia pollution from anaerobic digestion, higher concentrations of nutrients digestate that contribute to water pollution, increased disruption and pollution from new pipelines and trucks to transport manure or biogas through communities, and more toxic air pollution from biogas processing than is produced by fossil gas.

For example, as petitioners point out in their Petition for Rulemaking to Exclude all Fuels Derived from Biomethane from Dairy and Swine Manure from the Low Carbon Fuel Standard, the Lakeview Dairy Biogas project in Kern County, California, uses two internal combustion engines to produce over 1,000 kW of electricity on-site. Even with the required pollution control technology, this project emits 4.58 tons/year of NO<sub>x</sub>, 1.98 tons/year of PM<sub>10</sub> (fine particulate matter), and 3.18 tons/year of VOC. Compared to a natural gas combined cycle plant in a nearby town, the Lakeview digester project produces much higher levels of NO<sub>x</sub>, SO<sub>x</sub>, and VOC emissions per unit of electricity generated. Meanwhile, communities in California's San Joaquin Valley, which are disproportionately Latino and low-income, already suffer some of the worst air and water quality in the country due in large part to the concentration of dairy factory farms. The California Air Resources Board acknowledges that 1,200 residents of the San Joaquin Valley die prematurely each year from PM<sub>2.5</sub> pollution alone. Producing and combusting manure biogas onsite leads to even worse air quality, exacerbating public health harms and environmental injustice."

**Response:** Please refer to Master Responses 1, 4, and 5.

#### **217-3:** The commenter states, "The Low Carbon Fuel Standard is Flawed

The LCFS incorrectly assigns factory farm gas an extremely large negative Carbon Intensity (CI) score, one even better than electric vehicles powered by renewable electricity, and as result, it generates a large subsidy for the CAFOs and biogas operators. This is because CARB gives participating CAFOs credit for both reducing methane emissions from manure under the assumption that wet, methane-generating manure is an unavoidable byproduct of livestock production, and for replacing fossil fuels with higher CI scores.

This is flawed for a number of reasons. First, CARB completely disregards the greenhouse gas emissions from the underlying factory farming operations as well as the increased greenhouse gas emissions when operators use and dispose of the digester waste. Second, maintaining massive quantities of liquid manure is not a given; it is a choice — one that the LCFS rewards and reinforces. There are alternative manure management practices that have lower methane-emissions and are more sustainable.”

**Response:** Please refer to Master Responses 1 and 5.

**217-4:** The commenter states, “Fix the inaccurate Life Cycle Assessment that ignores upstream and downstream greenhouse gas emissions associated with factory farm gas production.”

**Response:** Please refer to Master Response 5.

**Comment Letter 219**

2/20/2024      Scott Hochberg  
Center For Biological Diversity

**219-1:** The commenter states, “Relying on crop-based biofuels results in both direct and indirect land use change emissions that worsen the climate crisis, counter to their intended purpose. For example, in an analysis of 17 potential alternative-fuel pathways looking at different feedstocks, technologies, and world regions, researchers found that using virgin vegetable oil had the highest indirect land-use change emissions because of links to high deforestation and peat oxidation in southeast Asia, driven by palm expansion. Though CARB staff are proposing to remove palm-derived fuels from eligibility under the LCFS, it must be noted that this does not eliminate the threat of CARB’s sanctioning of crop-based biofuels leading to palm oil expansion. In the same study, it was found that producing biofuels from any vegetable oil in any region, including corn and soy in the U.S. context, would encourage palm oil expansion and associated peat oxidation in southeast Asia due to substitutions among vegetable oils and international trade. Thus, high indirect land-use change emissions from virgin vegetable oil biofuel pathways undermine some, if not all, of the greenhouse gas savings from these fuels.

CARB staff state that, “[w]ith continued increased demands on biofuel crops the Proposed Amendments could contribute to increased direct and indirect land use change to accommodate new croplands,” but go on to minimize this statement by stating that “the likelihood of this is at least partially (and potentially fully) accounted for by the LUC scores added to crop-derived pathways.” However, the reality is that the Proposed Amendments likely will yield additional direct and indirect land use change emissions without any guarantee that these emissions will be fully accounted for. So CARB staff are proposing guidance on crop-based biofuels that could lead to unforeseen climate-harming emissions.”

**Response:** Please refer to Master Response 2.

**219-2:** The commenter states, “There could also be unforeseen harms to communities and the environment. One such harm is worsening water scarcity. A 2017 study found that increased production of crop-based biofuels heavily contributes to global water scarcity and is not the best option for bioenergy. Meanwhile, a 2016 study found that biofuels rely on about 2-3% of the global water and land used for agriculture. Based on the food calories used for biofuel production, that amount could feed about 30% of the malnourished global population.<sup>30</sup> Just in the United States, about 140 million people could be fed with the resources for bioethanol, and about 10 million people could be fed with the resources for biodiesel, indicating the threat of crop-based biofuels to global food security. Also, with increased production of crop-based biofuels, there is the potential for increased nutrient and pesticide runoff to surface waters and contamination of groundwater due to crop cultivation.”

**Response:** Please refer to Master Response 4.



**219-3:** The commenter states, “Another harm from crop-based biofuels is the impact to communities from biofuel refining and resulting criteria pollutant emissions. Crop-based biofuels are most often produced using the Hydroprocessed Esters and Fatty Acids (HEFA) pathway, which reacts crop feedstock with hydrogen at high temperatures and pressures to form fuel. Because of the high temperatures and extremely high pressures, runaway increases in temperature are common, which result in operators flaring refinery gases to bring conditions back under control. However, in doing so, toxic and smog-forming air contaminants are emitted such as particulate matter, sulfur dioxide, and hydrocarbons that worsen air quality. Because HEFA processes require more hydrogen than petroleum refining, it is expected that hydro-conversion-related flaring would be worse with HEFA refining, along with explosion and fire risk. With refineries most often sited in low-income communities and communities of color, environmental justice harms are exacerbated by the presence of HEFA refining and would worsen with crop-based biofuel expansion.”

**Response:** Please refer to Master Response 4. The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to cost concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**219-4:** The commenter states, “Ultimately, even hydrogen produced using clean, renewable energy should play only a limited role in a carbon-free future, given the risks it carries. First, hydrogen is a potent, indirect greenhouse gas with 100 times the warming power of CO<sub>2</sub> over a 10-year period and 33 times over 20 years. As a small molecule, hydrogen is more leakage-prone than methane, posing climate risks across the production and supply chains. Also, transporting hydrogen through pipelines is more dangerous than transporting methane: it is more likely to explode, burns hotter, and is more corrosive to pipelines. Further, hydrogen production from fossil gas and coal emits dangerous health-harming pollution. And all forms of hydrogen production use massive amounts of water—much more than solar and wind per unit of energy produced—which will put extra stress on water supplies in areas already suffering from climate crisis-charged drought. At present, about one million Californians lack access to safe, clean, and affordable water adequate for human consumption, begging the question of whether water should be diverted to hydrogen production.

Thus, the use of hydrogen should be limited to those sectors without a viable present-day alternative, such as replacing existing dirty gray fossil-based hydrogen, crude oil refineries, or steel manufacturing. This would effectively exclude the sectors for which the proposed amendments are most incentivizing hydrogen adoption: light-duty, medium-duty, and heavy-duty transport. Through the Hydrogen Refueling Infrastructure (HRI) provision, for instance, CARB is incentivizing the rapid buildout of hydrogen refueling infrastructure. However, resources would be better directed to other pursuits given that for light-duty vehicles, battery-electric is readily available, energy efficient, and lower cost than the hydrogen fuel cell

alternative. Likewise, for heavy-duty vehicles such as those in long-haul trucking, it has now been shown that battery-electric is competitive and economically advantageous. Whenever direct electrification can be used instead of hydrogen, as with vehicles, it's the demonstrably better choice. Electricity made from solar and wind is more efficient, lower cost, lower in CO<sub>2</sub> emissions, and a mature energy resource. The LCFS should be incentivizing full electrification rather than hydrogen which is projected to have only a limited role in a carbon-free future."

**Response:** Please refer to Master Response 4.

**219-5:** The commenter states, "We oppose the inclusion of woody biomass feedstocks, including forest and agricultural residues, in the LCFS program due to the significant greenhouse gas pollution, air pollution, degradation of forest ecosystems, and loss of forest carbon storage that come from producing biofuels and hydrogen from woody biomass. CARB's proposed specifications for forest residues are vague and will not meaningfully reduce harms.

- a. CARB should not include woody biomass, including forest and agricultural residues, as feedstocks in the LCFS program due to the harms to the climate, public health, and forest ecosystems.

As detailed below, the production of biofuels and hydrogen from woody biomass releases large amounts of planet-heating CO<sub>2</sub> and toxic air pollutants, worsening the climate emergency and harming public health. While the GREET model incorrectly treats forest feedstocks as carbon neutral, scientific research clearly shows that combustion or gasification of trees and other forest material—including residues considered to be "waste"—leads to a net increase of carbon emissions in the atmosphere for decades to centuries. Biomass facilities often concentrate pollution in communities of color and low-income communities in California, worsening environmental injustice. Adding CCS to biomass gasification, pyrolysis, or combustion would still result in significant climate and air pollution and threaten public and safety, given CCS has proven to be ineffective, unsafe, and energy-intensive. Incentivizing hydrogen and biofuels production from forest biomass risks increasing logging and thinning, which degrade wildlife habitat and result in a net loss of forest carbon storage and sequestration, at a time when we must be protecting forest carbon stores. Biofuel and hydrogen production from woody biomass are not part of a clean, just energy future and should not be included in the LCFS program.

- i. Gasification and pyrolysis of biomass to produce hydrogen and biofuels produce large amounts of CO<sub>2</sub> and health-harming pollutants."

Gasification and pyrolysis are the primary processes being promoted to produce hydrogen and biofuels from woody biomass such as trees and agricultural materials. The gasification of biomass at high temperatures (800-1200°C) produces a "syngas" containing large amounts of CO<sub>2</sub>, as well as methane (CH<sub>4</sub>), carbon monoxide (CO), and hydrogen (H<sub>2</sub>), in addition to liquid hydrocarbons and tar, solid char and ash residues, and a wide array of air pollutants. The pyrolysis of biomass additionally produces pyrolytic oil and larger quantities of char. The

biomass fuel, gasifier type, temperature, and gasifying agent (e.g., steam, air, oxygen, oxygen-enriched air) influence the composition of the syngas. Biomass gasification and pyrolysis processes to produce hydrogen are still in the initial development phase, have not been demonstrated at any meaningful scale, are technically difficult, and expensive.

ii. Health-harming pollutants.

Biomass gasification and pyrolysis produce a wide range of health-harming pollutants including fine particulate matter, NO<sub>x</sub>, SO<sub>x</sub>, benzene, toluene and xylenes (BTEX), tars and soot, and persistent organic pollutants such as polycyclic aromatic hydrocarbons (PAHs) (e.g., naphthalene), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs).

Importantly, gasification and pyrolysis of biomass are significant sources of fine particulate matter (PM 2.5) that can penetrate deeply into the lungs, even enter the bloodstream, and cause serious health problems. Fine particulate matter pollution is linked to a higher risk of premature death, heart disease, stroke, and aggravated asthma.

The formation of NO<sub>x</sub> precursors, including NH<sub>3</sub>, HCN and HNCO, during biomass pyrolysis has been widely reported, where NO<sub>x</sub> damages the respiratory system and contributes to acid rain, harming ecosystems. Of the BTEX compounds produced during gasification and pyrolysis, benzene is a known human carcinogen, and toluene and xylenes damage the brain and nervous system, respiratory system, kidneys, and liver.

The formation of liquid tar is an inherent problem in biomass gasification. Tar contains toxic substances such as benzene, toluene, and naphthalene, while tar build-up also lowers energy efficiency, interrupts continuous operation, and increases maintenance costs of gasification processes. Methods to clean tar from equipment would create large amounts of toxic wastewater, with resulting environmental and community harms.

iii. Climate-heating CO<sub>2</sub>.

Similar to biomass combustion, gasification and pyrolysis of biomass produce large quantities of CO<sub>2</sub> as well as methane emissions that worsen the climate emergency. Biomass-derived hydrogen and biofuels are often falsely promoted as being carbon neutral or carbon negative (i.e., meaning that they will lead to a net removal of CO<sub>2</sub> from the atmosphere) based on the inaccurate claims that woody biomass is a carbon neutral feedstock and/or that CCS can be used to capture the CO<sub>2</sub> emitted from the process. The claim that woody biomass is a carbon neutral feedstock has been thoroughly debunked, given the lost carbon storage and sequestration from extracting biomass, and the significant CO<sub>2</sub> emissions during biomass processing and gasification, pyrolysis, or combustion. For example, substantial upstream emissions are released from cutting and extracting trees and other vegetation which immediately ends their carbon storage and sequestration; the use of fertilizers and pesticides after cutting; transporting biomass often long distances in diesel trucks; and processing biomass through chipping and drying. The combustion, gasification, and pyrolysis of trees and

other forest material—including residues considered to be “waste”— leads to a net increase of carbon emissions in the atmosphere for decades to centuries.

Furthermore, CCS has consistently proven to be exceptionally ineffective, unsafe, expensive, and targets environmental justice communities. CCS operations are very energy-intensive given the high energy requirements needed to separate, compress, transport, and inject CO<sub>2</sub>, typically requiring at least 15-25% more energy, which results in increased greenhouse gas and air pollution emissions. CCS projects around the world have consistently failed to meet their carbon-capture promises, often by large margins. Moreover, 95% of CO<sub>2</sub> captured in the U.S. by CCS is used to pump oil and gas out of the ground in process called enhanced oil recovery, worsening the climate emergency. CCS poses significant new health, safety, and environmental risks from toxic air pollution emitted from CCS facilities, earthquake risks from underground CO<sub>2</sub> injection, and the inevitable ruptures of CO<sub>2</sub> pipelines and leaks from underground CO<sub>2</sub> storage that can sicken and even kill people. In short, putting CCS equipment on biomass gasification and pyrolysis facilities (BECCS) would still lead to significant CO<sub>2</sub> and co-pollutants emissions, endangering communities and the climate.”

**Response:** Please refer to Master Response 2, 4 and 5. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**219-6:** The commenter states, “Biomass gasification to produce hydrogen has extremely high-water usage. One recent study estimated that biomass gasification uses 306 kg water per kg of H<sub>2</sub> produced, which is orders of magnitude more than electrolysis production pathways estimated at 9 to 18 kg water per kg H<sub>2</sub>. This would put extra stress on water supplies in areas already suffering from climate crisis-charged drought.”

**Response:** Please refer to Master Response 4. As part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid off-site groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions. The comment does not raise issues related to the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 222**

2/20/2024

Nikita Pavlenko  
ICCT

**222-1:** The commenter states, “The LCFS program’s accelerating reliance on biomass-based diesel to meet the program’s greenhouse gas targets is at odds with the emerging evidence on the market-mediated GHG emissions from growing biofuel demand using purpose-grown crops.

The Draft Environmental Impact Analysis overlooks the magnitude of emissions uncertainty associated with crop-based biofuels production and overcounts emissions reductions attributable to the LCFS program. This problem is particularly relevant to BBD fuels due to their significant upstream market and environmental impacts that are not well accounted for in supply chain (attributional) life-cycle assessment (LCA). Though CARB has evaluated the indirect land-use change (ILUC) emissions attributable to vegetable oil-derived fuels, recent studies suggest that these emissions may be understated, and the existing ILUC emission factor used in the LCFS may not be a sufficient safeguard.”

**Response:** Please refer to Master Responses 2 and 5.

**Comment Letter 224**

2/20/2024

Ira Dassa  
Twelve Benefit Company

**224-1:** The commenter states, “Allowing indirect accounting for low-CI electricity used in the production of PtL fuel would greatly incentivize the scale-up of these fuels, especially ultra-low carbon PtL SAF, which does not present the indirect land use change impacts or feedstock constraints that other types of SAF (e.g., crop-based SAF and waste oil- or animal fat-based SAF) do.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to Master Response 2.

**Comment Letter 231**

2/20/2024

Victoria Bogdan Tejada

**231-1:** The commenter states, “This amendment creates a dangerous loophole that relies on a so-called climate solution that is anything but; the result will be California incentivizing and perpetuating the climate catastrophe and the health and environmental harms that come with it.”

**Response:** The comment does not raise issues related to the adequacy of EIA and no edits to the Draft EIA are required in response to this comment. Please refer to Section 4.0 of the EIA for a discussion of the environmental effects associated with the Proposed Amendments.

**Comment Letter 235**

2/20/2024

John Steelman  
Clean Air Task Force

**235-1:** The commenter states referring the proposed LCFS, “without adequate safeguards, these measures pose significant and unacceptable risks of rapidly driving up demand for crop-based biofuels with several potential negative consequences. Such consequences include increased lifecycle greenhouse emissions from direct and indirect land use changes, as well as disruptions to food markets and natural ecosystems.”

**Response:** Please refer to Master Responses 2 and 5. Economic effects of a project are not treated as significant effects on the environment under CEQA.

**235-2:** The commenter states, “Without adequate safeguards limiting the rapid growth in demand for crop-oil based biofuels, the current LCFS proposal could result in an increase in lifecycle greenhouse emissions due to direct and indirect land use changes.”

**Response:** Please refer to Master Responses 2 and 5.

**235-3:** The commenter states, “Without adequate safeguards, strengthening and extending LCFS carbon intensity benchmarks will likely accelerate the rapid growth in demand for bio-oil based biofuels, directly and indirectly impacting food markets and increasing emissions from land use changes”

**Response:** Please refer to Response to 235-1 above.

**235-4:** The commenter states, “Including intrastate fossil jet fuel in the LCFS is an important policy signal for decarbonizing the aviation sector, but the current proposal will further increase demand for bio-oil based fuels, given that refining and hydrotreating bio-oils is currently the only commercially viable alternative to fossil jet fuel at scale.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please also refer to the Recirculated EIA.

**235-5:** The commenter states, “The only proposed sustainability requirement for crop-based biofuels is third-party certification that the feedstocks are derived from land that has not been forested since 2008, which is too narrowly scoped to serve as an effective constraint on climate-damaging land use change”

**Response:** Please refer to Master Response 2.

**235-6:** The commenter states, “The resulting and potentially massive increase in demand for crop oil-based fuels markets can contribute to higher food and feed prices, which in turn can accelerate climate-damaging land clearing to accommodate new crop production.”



**Response:** Please refer to Master Response 2. The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment's potentially significant physical impacts on the environment. As such, comments related to cost concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**235-7:** The commenter states, "While obligating intrastate jet fuel is an important step in achieving emissions reductions, it will further accelerate demand for crop-oil feedstocks without proper safeguards."

As with strengthening the LCFS targets, our groups have also supported CARB's consideration and intention to obligate fossil aviation fuels as a deficit generating fuel. CARB's proposal to eliminate the exemption for intrastate fossil jet fuel beginning in 2028 is an important (if limited) step toward reducing emissions from aviation fuel in California. Intrastate fuels account for approximately 10% of the roughly 3 billion gallons of jet fuel used in California each year. Given the multiple certified fuel pathways for using crop oils as feedstocks for alternative jet fuel, obligating intrastate aviation fuel after 2028 could result in the consumption of several hundred million gallons of additional crop-based aviation fuel in addition to the rapidly increasing market for renewable diesel fuel. In addition, new federal tax credits for sustainable aviation fuels enacted in the Inflation Reduction Act could drive further growth in crop-based alternative jet fuel, which will remain an opt-in fuel for interstate and international flights originating in California."

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please also refer to the Recirculated EIA and Master Response 2.

**Comment Letter 239**

2/20/2024

Chriag Bhakta  
Food & Water Watch

**239-1:** The commenter states, “We write to express our collective concerns regarding the Air Resources Board’s (CARB) proposed rulemaking that doubles down on polluting factory farm biogas as the most lavishly incentivized transportation fuel under the state’s Low Carbon Fuel Standard (LCFS). Factory farm biogas is not clean energy, and CARB staff’s embrace of this false solution for the next two decades throws Californians already subjected to some of the worst environmental pollution in the nation under the bus. The proposed amendments to the LCFS fly in the face of years of advocacy by environmental justice and climate advocates and blatantly ignore California’s commitment to a just climate transition.”

**Response:** Please refer to Master Response 1. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**239-2:** The commenter states, “California's LCFS, originally conceived as a tool to combat climate pollution in the transportation sector, has been exploited and manipulated by powerful corporations, particularly Big Ag and Big Oil. Rather than serving its intended purpose, the LCFS has become the nation's largest and most lucrative pollution trading scheme for factory farm biogas across the country.”

**Response:** Please refer to Master Response 1.

**239-3:** The commenter states, “First, CARB is ignoring greenhouse gas emissions from the underlying factory farming operations as well as the increased greenhouse gas emissions when operators use and dispose of the digester waste. Second, CARB refuses to acknowledge that methane emissions from livestock manure cesspools is a choice and can be avoided with more sustainable practices like dry manure handling. For years, the LCFS operated under a rational framework that did not assume perpetual free-venting of methane pollution from livestock operations.”

**Response:** Please refer to Master Response 1.

**239-4:** The commenter states, “The existing LCFS rules perpetuate environmental injustice by disproportionately harming low-income communities and communities of color. Factory farms, predominantly located in these marginalized areas, cause severe harm to air, water, public health, rural economies, and overall quality of life. The extraction of methane from factory farm cesspools does nothing to alleviate the massive harm inflicted by mega-dairies and large factory farms on these communities.”

**Response:** Please refer to Master Responses 1 and 4. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**239-5:** The commenter states, “Fix the inaccurate Life Cycle Assessment that ignores upstream and downstream GHG emissions associated with factory farm gas production.”

**Response:** Please refer to Master Response 5.

**Comment Letter 248**

2/20/2024

Dan Ress  
Center on Race, Poverty, & the Environment

**248-1:** The commenter states, “The undersigned groups write to express their strong opposition to the California Air Resources Board (CARB) staff proposal regarding the Low Carbon Fuel Standard (LCFS), specifically provisions regarding nationwide direct air capture (DAC) crediting and carbon capture and storage (CCS) crediting for projects that use captured carbon for enhanced oil recovery (EOR). These two programs risk undermining any climate benefits from the LCFS while exacerbating environmental injustice. As such, we urge CARB to revise the staff proposal to eliminate crediting for DAC and EOR using captured carbon.”

**Response:** The commenter provides an opinion in opposition to the proposed DAC and CCS crediting for EOR and suggests that these programs risk undermining any climate benefits from the LCFS while exacerbating environmental injustice. GHG emissions associated with the Proposed Amendment are discussed in Section 3.A.2 of the Recirculated EIA. As discussed in Section 3.A.2, CARB staff expects the Proposed Amendments would reduce GHG emissions by 554 million metric tons annually compared to the baseline in carbon dioxide equivalent from 2024 through 2046. Therefore, implementation of the Proposed Amendments would result in a beneficial impact related to climate change.

Environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required.

**248-2:** The commenter states, “Outside of California, CARB has a limited presence and jurisdiction. While CARB can certainly review documents from out-of-state, it is unlikely to conduct frequent onsite inspections for DAC projects in, say, Louisiana, but rather will count on oil majors to honestly conduct their operations, despite the well-documented history of oil companies lying for decades about climate science. Without careful oversight, projects likely will not provide any climate benefits at all and may instead cause net increases of greenhouse gases. Further, poor oversight and weak regulations in other states may result in significant local harms.

DAC’s extreme energy demands can be met by any energy source, but CARB must ensure that, where it allows or incentivizes deployment, DAC only employs clean renewable energy with storage. However, some DAC projects plan to use fossil fuels for energy, such as one of the Carbon TerraVault projects that intends to use methane fuel cells, which will paradoxically yield greenhouse gas emissions while trying to capture CO<sub>2</sub>. Meeting DAC power demands with fossil fuels, whether onsite or through the grid, could cause projects to generate more greenhouse gases than they capture. In addition, they will cause local harms along the lifecycle of those fossil fuels, from extraction to refining to transportation to storage to combustion.”

**Response:** As discussed in Section 3.A.2 of the Recirculated EIA, the LCFS calculates emission reductions on a full lifecycle basis for the fuel production, transport, and use; therefore, GHG emission reductions occur both in California and out-of-state. Staff calculated GHGs associated with each scenario. Out-of-state operations are too speculative for any further evaluation. Please refer to Master Response 3 regarding out-of-state impacts.

**248-3:** The commenter states, “Most DAC projects rely on toxic materials like ammonia to filter carbon from ambient air, and thus they risk leaking toxic pollution into the air and water. Moreover, DAC’s intended purpose is to gather and concentrate CO<sub>2</sub>, which is a toxic waste.”

**Response:** Please refer to Master Response 4.

**248-4:** The commenter states, “Also, upon interacting with water, CO<sub>2</sub> forms carbonic acid. While carbonic acid is safe to drink, it harms irrigation supplies. In California, that could have serious implications because our storage formations are right below the nation’s most productive agricultural lands in the Central Valley. Further, carbonic acid tends to carry heavy metals such as arsenic, which can spoil drinking water supplies.”

**Response:** Please refer to Master Response 4.

**248-5:** The commenter states, “Using captured carbon for EOR results in serious climate harms under the guise of climate action. When captured carbon is used for EOR, four times more carbon is emitted than is captured.[1] This is deeply troubling given that an estimated 80% of global captured carbon is being used to increase oil production.[2] Expanding EOR in the United States could result in an additional 400,000 barrels per day oil production by 2035, which would directly lead to as much as 50.7 million metric tons of net CO<sub>2</sub> emissions annually.[3] Funded largely by taxpayers and—through the LCFS—car drivers, that is not a climate solution but rather a fossil fuel subsidy. We should not use the LCFS as a fossil fuel subsidy, so we should discontinue this crediting practice immediately.”

**Response:** GHG emissions associated with the Proposed Amendment are discussed on pages 57 through 61 of the Recirculated EIA. CARB staff expects the Proposed Amendments would reduce GHG emissions by 554 million metric tons annually compared to the baseline in carbon dioxide equivalent from 2024 through 2046. Therefore, implementation of the Proposed Amendments would result in a beneficial impact on GHG emissions.

**Comment Letter 249**

2/20/2024

Sam Wade  
Coalition for Renewable Gas

**249-1:** The commenter states, “A California-only mandate for dairy manure methane control would likely drive “economic leakage” (unless LCFS support continued as well). Economic leakage in the environmental context occurs when a regulatory environment in one jurisdiction drives the migration of a key business sector to another region without similar regulations. This can lead to simply shifting the pollution location without any global reduction in GHGs. This is particularly likely to occur in markets with the demand for the product is steadily increasing, such as the market for milk products.”

**Response:** The comment provides an opinion on economic leakage related to a mandate to regulate dairy manure methane. The LCFS Amendments provide crediting opportunities for captured biogas and is not a mandate to regulate methane emissions from dairies. The comment does not raise issues related to the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment. No further response is required.

**249-2:** The commenter states, “Given the physics of how gases quickly intermix in pipeline systems, no feasible alternative exists to book and claim accounting for RNG. Requiring redundant RNG-only pipeline infrastructure and/or physically segregated trucking/rail of gas would clearly increase GHG emissions and the non-climate environmental impact of RNG delivery. Requiring an RNG developer to hold long-term firm pipeline capacity from production source to end use does not ensure that the renewable molecules flow in that path. Instead, it only adds an extra layer of cost because it does not allow market participants to take advantage of liquid supply trading hubs and pipeline displacement, which can bring transportation costs down significantly.”

**Response:** GHG emissions impacts related to RNG production are analyzed in the Recirculated EIA. As discussed in detailed in Section 3.A.2, comparatively small level of GHG emissions related to construction and operation of facilities associated with the compliance responses (e.g., RNG production facilities) would be exceeded by the reductions in GHG emissions from the implementation of the Proposed Amendments. Implementation of the Proposed Amendments would result in a beneficial impact related to GHG emissions.

The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to cost concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**Comment Letter 250**

2/20/2024

Tanya M. DeRivi  
WSPA

**250-1:** The commenter states, “This approach also runs counter to existing programs incentivizing the development of projects to address Short-Lived Climate Pollutants. We encourage CARB to instead study the potential impacts of imposing deliverability requirements before adding untested regulatory restrictions.”

**Response:** The comment suggests CARB to study potential impacts of imposing deliverability requirements. The comment does not raise issues related to the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment.

**250-2:** The commenter states, “Setting such limits requires a thorough, independent analysis that demonstrates a measurable impact to land use due to crop-based feedstocks used for fuel production. WSPA encourages CARB to continue prioritizing sustainability as part of the LCFS, but objects to any further limitations.”

**Response:** Please refer to Master Response 2.

**250-3:** The commenter states, “Food supply concerns are similarly addressed by ILUC inputs to carbon intensity scores. It is noteworthy that the 2018 LCFS readoption evaluated several different fuel supply scenarios<sup>6</sup> with varying amounts of biodiesel and renewable diesel available to support the LCFS’s goal of reducing the CI of fuels in California 20% by 2030. The scenario chosen to illustrate a feasible program estimated the growth of biodiesel and renewable diesel would be on the order of 146% (and evaluated growth up to a 215% increase) from 2018 levels through to 2030. Much of the anticipated growth in these fuels has already been considered by CARB, including potential land use impacts and other factors<sup>7</sup>. Today, feedstock availability is aligning with expectations from the 2018 LCFS readoption. As shown in the 2018 illustrative compliance calculator,<sup>8</sup> CARB forecasted the CIs for biodiesel and renewable diesel to be 34 gCO<sub>2</sub>e/MJ for biodiesel and 30 gCO<sub>2</sub>e/MJ for renewable diesel into 2030. As of Q2 2022, CARB has reported<sup>9</sup> average CI values of 27.51 gCO<sub>2</sub>e/MJ for biodiesel and 35.96 gCO<sub>2</sub>e/MJ for renewable diesel. Given investments taking place, additional restrictions should not be created as anticipated growth of these fuels and impact to land use has already been considered.”

**Response:** Please refer to Master Response 2.

**Comment Letter 252**

2/20/2024

Dallas Gerber  
Growth Energy

**252-1:** The commenter states, “CARB may not undertake regulatory activities to reduce GHG emissions that interfere with federal or state efforts to reduce toxic air contaminant emissions in the state. The proposed sustainability requirements may reduce the amount of renewable biofuel consumed in California by placing significant compliance costs on producers of bioethanol and decreasing the availability of credit-generating biofuels. As a direct result of reducing the available volumes of biofuel, fossil fuel consumption will increase. This boost in fossil fuel consumption would increase not only GHG emissions, but also emissions of several toxic air pollutants.”

**Response:** Please refer to the Recirculated EIA and Master Response 4. Staff does not anticipate a reduction in biofuel consumption as a result of the Proposed Amendments.

**252-2:** The commenter states, “In addition, if the sustainability requirements displace volumes of biofuels, these volumes will likely shift to increased fossil fuel consumption, with resulting adverse air quality impacts as discussed above in Section II (C). This increase in toxic air pollution risks disproportionately burdening frontline communities located near major transportation corridors and around airports and ports.

We encourage CARB to fully identify and evaluate the potential environmental justice impacts of the Proposal once any “sustainability” requirements are clarified prior to finalizing this rule.”

**Response:** Please refer to Response 252-1 to Master Response 2.



**Comment Letter 253**

2/20/2024

Tim Gibbons  
Missouri Rural Crisis Center

**253-1:** The commenter states, “Incentivize more corporate factory farms, harming family farmers, rural communities, and our environment, including increased water and air pollution.”

**Response:** Please refer to Master Responses 1 and 4.

**253-2:** The commenter states, “Commoditize methane production, which would fuel more methane producing practices, creating more destructive greenhouse gases.”

**Response:** Please refer to Master Response 1.

**Comment Letter 268**

2/20/2024

Paul Sousa  
Western United Dairies

**268-1:** The commenter states, “California dairy farms are very sensitive to leakage with the California dairy herd continuing to migrate to other states as shown in recent ARB reports on dairy and livestock populations, including the ARB GHG inventory. Removing the avoided methane emissions value from the LCFS will add pressure on California dairies to leave California to other states without GHG reductions targets for dairies. This will increase global GHG emissions counter to ARB goals. The most effective way to achieve ARB’s GHG goals is to support California’s dairy farmers in their reduction of methane emissions thereby providing an example to other states and countries on how to achieve emissions reductions and maintain a healthy farm sector that provides jobs in much needed areas of the state and supports fresh local food production.”

**Response:** Please refer to Master Responses 1 and 3. The analysis in the EIA and Recirculated EIA addresses environmental impacts both within California and outside the state to the extent that they are reasonably foreseeable and do not require speculations. It would be speculative to predict phasing out the avoided methane credit from the LCFS would eventually increase global GHG emissions counter to CARB’s goals. The EIA and Recirculated EIA makes a good-faith effort to disclose potentially adverse environmental effects of the Proposed Amendments. Where appropriate, the GHG emissions impacts associated with the avoided methane credit are disclosed, which is intended to reasonably describe the types of impacts associated with the compliance responses resulting from the phase out of the avoided methane credit. See also pages 57 through 61 of the Recirculated EIA for GHG emissions associated with the Proposed Amendments.

**Comment Letter 270**

2/20/2024

John Peck  
Family Farm Defenders

**270-1:** The commenter states, “As a national family farm organization, we would urge you to no longer allow methane offsets in the LCFS market – these are dubious (at best) and the mega dairy CAFOs claiming such credits are causing serious harm to Midwest rural communities. At minimum, there should be no “grace period” allowed for such CAFO biogas offset claims – their lousy track record hardly warrants such. The “life cycle” analysis of supposed methane emission as a possible offset for carbon dioxide emission needs to be seriously reevaluated – especially if the credit claims are egregiously overstated or even totally bogus.”

**Response:** Please refer to Master Responses 1 and 5.

**Comment Letter 281**

2/20/2024

Claire Broome  
350 Bay Area

**281-1:** The commenter states, “Conduct and incorporate a full life cycle assessment of all air pollution and greenhouse gas (GHG) emissions for all pathways, and their implications for environmental justice communities.”

**Response:** Please refer to Master Response 5. Environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required

**281-2:** The commenter states, “CARB has the power to shift California towards truly clean energy solutions and remove the incentives that enable the continued reliance on combustion fuels, especially those which artefactually increase dairy biogas and corn ethanol production. The staff proposal includes polices noted above that make the climate and pollution crisis worse.”

**Response:** Please refer to Master Responses 1 and 5.

**Comment Letter 285**

2/20/2024

Jeremy Martin  
Union of Concerned Scientists

**285-1:** The commenter states, “Cap compliance from vegetable oil-based biofuels to ensure the LCFS doesn’t exacerbate global hunger and deforestation.

We published extensive analyses earlier this year on the implications of the boom in renewable diesel consumption in California for global food markets and deforestation (Attachment 1) and why a cap on the use of vegetable oil-based fuels for LCFS compliance is essential to avoid this harm and stabilize the LCFS (Attachment 2). The reasons given in the Initial Statement of Reasons (ISOR) to reject a cap on virgin oil-based fuels in Alternative 1 are based on inaccurate claims of climate and air quality benefits and associated health outcomes, which double count climate benefits already required by federal law and ignore CARB’s own research on air quality benefits from new technology diesel engines running on renewable diesel. A corrected analysis would show that there are few if any real climate or air quality benefits associated with unlimited use of vegetable oil-based fuels and there are enormous harms. The proposed sustainability guardrails are inadequate because they do not address vegetable oil diverted from food to fuel use. Alternative 1 discussed in the ISOR is a useful step forward, but a better solution would be to limit the use of all lipid-based fuels at a reasonable share, certainly less than half, of the feedstock available for fuel production in the United States, or about 1.5 billion gallons. While chain of custody tracking is an inadequate safeguard against deforestation, it should be implemented for used cooking oil to reduce the risk of fraud.”

**Response:** Please refer to Master Response 2.

**285-2:** The commenter states, “While we support increasing geographic flexibilities for zero-emission fueling stations, the program should include restrictions to avoid increasing traffic and noise burdens in communities adjacent to freight and industrial operations. We encourage CARB to work directly with these communities and consult pollution and traffic data when designing credits and incentives for ZEV fueling stations.”

**Response:** The Draft EIA takes a programmatic approach in evaluating the environmental impacts of the reasonably foreseeable compliance response to the Proposed Amendments as detailed in Chapter 2.0 of the Draft EIA. As stated on pages 122 and 130 of the Draft EIA, short-term construction-related and long-term operational-related noise and transportation impacts from the Proposed Amendments were found to be potentially significant. These impacts could be reduced to a less-than-significant level by mitigation measures prescribed by local, state, federal, or other land use or permitting agencies (either in the U.S. or abroad) with approval authority over the particular development projects. However, because CARB has no land use authority, mitigation is not within its purview to reduce significant impacts to less-than-

significant levels. No edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 288**

2/20/2024

Kiki Velez  
NRDC

**288-1:** The commenter states, “If approved, this recommendation would lock in the distortionary impacts of avoided methane crediting for decades – undermining California’s clean transportation goals and harming communities that live near concentrated-animal feeding operations (CAFOs) and refineries. Instead, CARB must correct the over-crediting of livestock biomethane by the end of 2024 and utilize its SB 1383 authority to open a new proceeding specifically designed to regulate emissions from the agricultural sector.”

**Response:** Please refer to Master Response 1.

**288-2:** The commenter states, “The LCFS program’s current design is harming communities living near CAFOs and refineries. CARB staff’s proposal will continue to do the same. Outsized incentives for biomethane particularly benefit large livestock operations, which pollute the air and water of the communities who live near them.”

**Response:** Refer to Mater Responses 1 and 4. Environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required.

**288-3:** The commenter states, “barrel of that soybean oil came from suppliers who had not recently cleared forests to grow the soybeans. But that information would have no bearing on the impact of the additional oil crops that would be planted to replace some or all of those 2.5 MMT of oil in the food crop market – which could be soybean oil, palm oil, or any combination of fungible oil crops. The planting of those replacement crops may well have devastating deforestation impacts, and merely certifying that the particular oil used by Phillips 66 was responsibly sourced would disclose nothing about such impacts.”

**Response:** Please refer to Master Response 2.

**288-4:** The commenter states, “We call on CARB to analyze the carbon and ecological impact of feedstock caps separately and in isolation from other types of policy measures, including but not limited to a re-evaluation of CI scores associated with lipid feedstocks; and develop appropriate caps on such feedstocks based upon that analysis. The analysis must take into account not only direct impacts of consumption of particular volumes of lipid feedstock for energy production, but also the indirect and substitution impacts that result from the fungibility of the lipid feedstocks. All such analysis, including modeling results, should be made publicly available with an opportunity for comment before any decision is finalized.”

**Response:** Please refer to Master Response 1.

**Comment Letter 289**

2/20/2024

Jeremy Martin  
Union of Concern Scientists

**289-1:** The commenter states, “The unprecedented speed and magnitude of the expansion of renewable diesel used in California, increasingly made from soybean oil, is harming people, accelerating tropical deforestation and undermining California’s climate policies. We call on the California Air Resources Board to immediately cap the use of vegetable oil-based biofuels and to strengthen safeguards within the Low Carbon Fuel Standard (LCFS) to ensure that the use of biofuels does not directly or indirectly contribute to global food price shocks, agricultural expansion and deforestation.”

**Response:** Please refer to Master Response 2.



**Comment Letter 290**

2/20/2024

Sam Uden  
UCS, NRDC, and WRI

**290-1:** The commenter states, “The U.S. EPA examined this issue in a recent technical study and found that a 1 billion gallon increase in soybean biodiesel demand (far less than the increase the LCFS amendments would cause according to the University of California study) would result in net increases in GHG emissions according to two of the three energy and land-use models they used. The net increase in GHG emissions caused by increased demand for virgin vegetable oil could more than offset the total benefits of the LCFS program according to an estimate by the World Resources Institute.”

**Response:** Please refer to Master Response 2.

**Comment Letter 295**

2/20/2024

Michael Maguire  
Office of Planning and Research

**295-1:** The commenter states, “Crop-based fuel production in the United States and globally has been identified as having potentially significant indirect global land use impacts, including deforestation and competition with food production. More broadly, there is significant uncertainty in the ability to estimate the complete lifecycle emissions from crop-based biofuels.”

**Response:** Please refer to Master Responses 2 and 5.

**Comment Letter 299**

2/20/2024

Ellison Folk  
Leadership Counsel for Justice and Accountability

**299-1:** The commenter states, “This firm represents the Leadership Counsel for Justice and Accountability (“Leadership Counsel”) in matters relating to the California Air Resources Board’s (“CARB”) Proposed Amendments to the Low Carbon Fuel Standard Regulation (“Proposed Amendments” or “Project”). Central Valley Defenders of Clean Water & Air, Animal Legal Defense Fund, and Food & Water Watch have informed us that they also join in this letter. CARB’s adoption of the Proposed Amendments is subject to the California Environmental Quality Act (“CEQA”).<sup>1</sup> CARB’s Draft Environmental Impact Analysis (“Draft EIA”) must therefore: evaluate all reasonably foreseeable impacts of the Proposed Amendments in sufficient detail; adopt all feasible mitigation measures to lessen the severity of the Proposed Amendments’ environmental impacts; and consider all feasible alternatives that would achieve the goals of the Proposed Amendments while lessening the severity of the Proposed Amendments’ environmental impacts. Public Res. Code §§ 21002.1; 21100. The Draft EIA fails to comply with each of these obligations.

As discussed in more detail below, the Proposed Amendments will increase the already significant incentive concentrated animal feeding operations (“factory farms”) have to create more Low Carbon Fuel Standard-eligible fuels and expand their operations to increase fuel production. Despite this inevitable effect of the Proposed Amendments, CARB’s Draft EIA fails to mention—let alone analyze—the environmental impacts associated with factory farm expansions or anaerobic digestion-related fuel production. The Draft EIA acknowledges that the installation of anaerobic digesters, which are necessary to generate LCF-eligible fuel from manure methane emissions, will have significant environmental impacts. However, the Draft EIA fails to adequately discuss and analyze these impacts, which include impacts to air quality and water quality and adverse public health impacts on communities living in close proximity to factory farms.

In addition, the Draft EIA fails to propose adequate mitigation measures to address the project’s impacts and fails to adequately analyze alternatives to the project. These inadequacies require that the Draft EIA be revised and recirculated so that the public and decision-makers are provided with a proper analysis of the project’s significant environmental impacts and feasible mitigation for those impacts. See CEQA Guidelines § 15002(a)(1) (listing as one of the “basic purposes” of CEQA to “[i]nform governmental decision makers and the public about the potential, significant environmental effects of proposed activities”).

**Response:** Please refer to Master Response 1 and the Recirculated EIA. In addition, the commenter states that that EIA fails to propose adequate mitigation measures and fails to adequately analyze alternatives. However, the commenter does not provide any specific evidence of infeasibility of the mitigation measures included in the EIA. Please refer to response to comment 1-2 above related to alternatives. However, this comment is

acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**299-2:** The Proposed Amendments incentivize factory farm expansion and the installation of anaerobic digesters.

The Proposed Amendments will greatly increase the incentive that already exists under the Low Carbon Fuel Standard (“LCFS”) for factory farm expansion and digester installation.

This is evidenced in the stated Project objectives, which specify the following objectives:

- Increase credit prices by increasing the carbon intensity benchmarks (Objectives 1-4, Draft EIA at 13)
- Incentivize more digesters to achieve the Senate Bill 1383, Senate Bill 32, and Assembly Bill 1279 GHG reduction targets (Objective 5, Draft EIA at 13).
- Use the LCFS to build out and then transition biomethane infrastructure from supplying transportation fuels to supplying hydrogen fuels for stationary sources (Objective 5, Draft EIA at 13).

Therefore, CARB has designed the Proposed Amendments to increase carbon intensity targets, which in turn, will increase demand for credits and increase credit prices. Currently, biomethane accounts for approximately 20 percent of credits generated but only 1 percent of energy used for transportation. The quantity and growth of biomethane credits in the LCFS has contributed to a glut of credits at low prices and diminished incentive for biogas investors to expand their investments. The Proposed Amendments would increase the value of LCFS credits and incentivize investors to build more digesters and generate more credits. The Proposed Amendments incentivize fuel production practices that will, in fact, increase GHG emissions and result in significant environmental impacts.

The Proposed Amendments include three distinct changes to the LCFS that will increase the incentives factory farms have to expand their operations and install anaerobic digesters: (1) strengthening the carbon intensity benchmark, thereby increasing the price of credits for eligible fuel pathways, including electricity, natural gas, and hydrogen generated from factory farm manure methane emissions; (2) limiting biomethane pathways eligible for LCFS credits with deliverability requirements, which will also increase the price of credits for eligible fuel pathways; and (3) restricting new compressed natural gas and hydrogen fuel pathways that qualify for 35 years of avoided methane crediting to those that CARB certifies or that break ground by December 31, 2029.

By strengthening the carbon intensity benchmark from a 20% reduction in carbon intensity by 2030 to 30% by 2030 and establishing a new 90% carbon intensity reduction benchmark by 2045, CARB will increase demand for LCFS credits in the near-term, especially with the “step down” in 2025.<sup>4</sup> The intended and inevitable effect of this change will be to increase the

demand of LCFS credits available for purchase, thereby increasing credit prices. Thus, those fuel pathways that qualify for credits after the amendments go into effect—including electricity, natural gas, and hydrogen derived from factory farm manure—will receive more money per credit sold. The Proposed Amendments will therefore incentivize factory farms to increase their herds to maximize manure methane production (credit generation). This proposed change will also provide incentives for the installation of digesters at factory farms, and thus result in GHG and air pollutant emissions.

Additionally, the amendments include new deliverability requirements that will limit the biomethane eligible for LCFS crediting to biomethane “carried through common carrier pipelines that physically flow within California or toward end use in California.”

Currently, all factory farms across the nation can qualify for LCFS credits on the same basis as factory farms in California. As with the carbon intensity benchmark change, these deliverability requirements will further limit the supply of LCFS credits, thereby increasing the amount of money eligible fuel producers receive per credit. Also, by limiting eligibility to those factory farms that have a connection to California, these deliverability requirements will further incentivize factory farm expansion specifically in California along with the installation of digesters at livestock facilities in California.

Lastly, the Proposed Amendments draw a bright line between factory farm fuel pathways that are certified before, and after, January 1, 2030, with respect to avoided methane crediting.<sup>6</sup> If a factory farm fuel pathway is certified before January 1, 2030, that pathway is eligible to be renewed for up to three consecutive 10-year crediting periods. However, fuel pathways for bio-CNG, bio-LNG, and bio L-CNG from projects that break ground after December 31, 2029 can only generate avoided methane credits through December 31, 2040. Similarly, fuel pathways for hydrogen from projects that break ground after December 31, 2029 can only generate avoided methane credits through December 31, 2045. The Proposed Amendments therefore provide a significant incentive for factory farms to expand their herds and install digesters before December 31, 2029.

The Proposed Amendments’ incentives to expand CAFO herds and install polluting anaerobic digesters by increasing the monetization of manure methane will have significant impacts on the environment which the Draft EIA fails to adequately analyze and fails to require feasible mitigation or project alternative, as described below.

**Response:** Please refer to Master Responses 1 and 4 and the Recirculated EIA.

**299-3:** The commenter states, “The Draft EIA’s Environmental Impacts analysis violates CEQA.

A. The Draft EIA fails to analyze the Proposed Amendments’ environmental impacts.

1. Expansion of factory farm herds is a reasonable expected result in response to the Proposed Amendments.

CEQA requires lead agencies to analyze all reasonably foreseeable environmental impacts caused by a project they are proposing to approve. *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 396-98; *Ebbets Pass Forest Watch v. Cal. Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 954-55. A public agency can only omit analysis of its project's impact if it is "speculative." *Santa Rita Union School District v. City of Salinas* (2023) 94 Cal.App.5th 298, 334-36. An agency's conclusion that a particular environmental impact is too speculative to be adequately analyzed must be supported by substantial evidence. *Id.* at 335. To support such a conclusion, the CEQA Guidelines require lead agencies to conduct a "thorough investigation" and "note its conclusion" that the impact is too speculative to be considered. 14 Cal. Code Regs. § 15145; *County of Butte v. Dept. of Water Resources* (2023) 90 Cal.App.5th 147, 161; *Citizens' Committee to Complete the Refuge v. City of Newark* (2021) 74 Cal.App.5th 460, 479.

The Draft EIA's analysis is "based on reasonably foreseeable compliance responses that are based on a set of reasonable assumptions" and purportedly "includes actions that could likely occur under a broad range of the potential scenarios." As explained in Section I, *supra*, the Proposed Amendments include three distinct changes that increase factory farms' incentive to generate more LCFS-eligible fuel by expanding existing herds and installing digesters. The Draft EIA considers the installation of anaerobic digesters a reasonable compliance response because the Proposed Amendments would "incentivize the collection and use of biomethane gas from dairies."

The same elements of the Proposed Amendments that incentivize collecting existing biomethane at factory farms also incentivize increasing the volume of biomethane at factory farms. This incentive to produce more methane necessarily includes expanding factory farm herds to generate more manure. However, the Draft EIA ignores this potential impact entirely. The Draft EIA fails to provide any evidence, let alone substantial evidence, supporting its omission of factory farm expansion as a reasonable compliance response.

As explained in Dr. Secchi's comments, the analysis of Project-related impacts related to resulting factory farm expansion fails for two reasons. First, the "ISOR offers no monitoring data showing whether the LCFS has caused, or the proposed amendments will cause, herd expansions at dairies or hog facilities located in California or outside of California." Without such data, the Draft EIA has no evidence to support an assumption that the use of digesters at factory farms results in a reduction of methane emissions overall.

Second, the evidence demonstrates that since the adoption of the low carbon fuel standard and Federal subsidy programs encouraging use of digesters, factory farms have expanded both inside and outside of California. Dr. Secchi posits that, in reality, the incentives created by the Proposed Amendments are likely to result in significant expansion of factory farms that will, in turn, increase the amount of methane produced.

Recent deregulation of biodigesters in Iowa is correlated with dairy expansions in that state. As explained above, by increasing the carbon intensity benchmark and the value of credits, the Proposed Amendments will incentivize increased expansion and concentration of dairy

operations leading to increased adverse environmental impacts (as discussed further below). The aforementioned is a reasonably foreseeable compliance response that is not accounted for in the ISOR or the Draft EIA.

Recent data from the USDA Ag Census further demonstrates that during the period that CARB has implemented its avoided methane crediting policy (since the 2018 LCFS amendments), the number of milk cows at large, California dairies have increased while the number of milk cows at smaller dairies have decreased, showing that the California dairy herd is consolidating into larger dairies that produce and store sufficient quantities of manure to finance and generate revenues from captured methane. The data show that for dairies with 2,500 or more milk cows, the milk cow herd increased from 808,503 milk cows in 2017 to 1,025,716 milk cows in 2022, or an increase of 28.6 percent. In contrast, the data show that for dairies with less than 1,000 cows, the milk cow herd decreased from 303,746 milk cows in 2017 to 144,472 milk cows in 2022, or a decrease of 52.4 percent. While correlation does not establish causation, the data strongly suggest that the LCFS has had a substantial effect on the increase in milk cows at the largest dairies which are most likely to install digesters and monetize their manure.”

**Response:** Please refer to Master Responses 1 and 4 and the Recirculated EIA.

**299-4:** The commenter states, “The Draft EIA fails to adequately analyze nitrogen-based emissions from digesters that contribute to PM2.5 nonattainment and climate change. Having failed to properly analyze the foreseeable expansion of factory farms as a result of the Project, the Draft EIA fails to analyze the Project’s related impacts. It is well-established that “industrial dairies in the San Joaquin Valley are a major source of local air and water pollution, nuisance odors, groundwater overdraft, and greenhouse gas emissions.” Specifically, dairies are the largest source of volatile organic compounds, in the San Joaquin Valley. Oxides of nitrogen result from combustion of fuels, including biogas fuels from anaerobic digesters. Volatile organic compounds and NOx are precursors to ozone formation, which can cause a variety of respiratory illnesses, especially in children and for people who have asthma.<sup>16</sup> Factory farms and the resulting digestate are also a significant source of ammonia, which impacts nearby residents as a toxic gas and also reacts to form ammonium nitrate, a form of fine particulate matter for which the EPA has classified the valley as nonattainment with the federal health-based National Ambient Air Quality Standard.

In addition, contaminated runoff can result in water pollution in both surface and ground water; the intensive water use required by factory farms results in overdraft of groundwater supplies; and caustic ammonia emissions can result in illness and odors. As discussed below, the Draft EIA’s failure to analyze the impacts of the Proposed Amendments, both resulting in significant expansion of factory farms and due to increased use of digesters, implicates the EIA’s analysis of all of the aforementioned environmental impacts. Even where the Draft EIA did purport to evaluate impacts, the analysis is perfunctory”

**Response:** Please refer to Master Responses 1 and 4 and the Recirculated EIA. The EIA generally does not analyze site specific impacts when determinations regarding the location of

future facilities or other infrastructure would be speculative. Any new or modified facilities, no matter their size and location, would be required to seek local or state land use approvals prior to their development. Part of the land use entitlement process for new or modified facilities in California requires that projects such as digesters undergo any necessary environmental review consistent with the requirements of CEQA and the CEQA Guidelines.

**299-5:** The commenter states, “Ammonia, a toxic, odorous gas, causes respiratory issues; irritation to the throat, lungs, and eyes; and lung damage if exposure to elevated ammonia levels is prolonged. In addition to the health risks imposed by increased local emissions, ammonia also reacts with nitrogen oxides (e.g., NO<sub>x</sub>) in winter and contributes to the formation of ammonium nitrate, a fine particulate matter (“PM<sub>2.5</sub>”). In the United States, ammonia from agriculture accounts for the formation of almost one third of PM<sub>2.5</sub>.<sup>20</sup> Exposure to PM 2.5 is linked to premature deaths in people with heart or lung disease, heart attacks, irregular heartbeat, aggravated asthma, decreased lung function and long-term lung conditions including cancer. Yet, the Draft EIA’s analysis of the Project’s public health and safety impacts is cursory at best.”

**Response:** Please refer to Master Response 4 and the Recirculated EIA.

**299-6:** The commenter states, “The Draft EIA analysis omits a full accounting of greenhouse gas emissions resulting from both a foreseeable expansion of factory farms and increased use of digesters. For example, as the Rosenfeld Comments explain, during biogas combustion in the anaerobic digestion process, ammonia is oxidized into nitrous oxides. Furthermore digester solids emit significant nitrous oxide emissions that negate methane captured by the digester. According to the EPA, nitrous oxide (“N<sub>2</sub>O”) has a Global Warming Potential that is 273 times that of carbon dioxide (“CO<sub>2</sub>”) for a 100-year timescale.

Therefore, N<sub>2</sub>O emitted today remains in the atmosphere for more than 100 years, on average. Yet, the Draft EIA omits any evaluation impacts from Project-related increases of N<sub>2</sub>O. In another example, NO<sub>x</sub> emissions react with volatile organic compounds in the presence of sunlight to form ozone, which also contributes to climate change. Ozone (O<sub>3</sub>) is the third most important anthropogenic greenhouse gas after carbon dioxide (CO<sub>2</sub>) and methane. NO<sub>x</sub> also reacts with ammonia to form ammonium nitrate, a form of PM<sub>2.5</sub>. The San Joaquin Valley of California, where most factory farms and biodigesters are located, is a nonattainment area for both ozone and PM<sub>2.5</sub> National Ambient Air Quality Standards. However, the Draft EIA provides only a cursory—and internally inconsistent—discussion of the potential impacts related to ozone and PM<sub>2.5</sub> formation. On the one hand, the Draft EIA states the Proposed Amendments “could result in an overall decrease in long-term operational NO<sub>x</sub> and PM<sub>2.5</sub> emissions...in all state designated ozone non-attainment areas from 2024 through 2046,” (emphasis added) with a corresponding reduction in health impacts.<sup>26</sup> But the Draft EIA then pivots to conclude that long-term impacts from NO<sub>x</sub> and PM 2.5 emissions “could be potentially significant and unavoidable.”

The Draft EIA’s conclusion that the Proposed Amendments could reduce NO<sub>x</sub> and PM<sub>2.5</sub> emissions fails to account for emissions resulting both from the increased use of digesters and



the expansion of factory farms. To the extent the Draft EIA makes any attempt to acknowledge the potentially significant impacts of increased NOx and PM2.5, it does not provide any of the information required by CEQA to explain the extent and severity of these impacts. The Draft EIA's failure to provide meaningful information about the significance of these impacts violates CEQA. *Cleveland Nat'l Forest Foundation v. San Diego Assn. of Governments* (2017) 3 Cal.5th 497, 514 ("an EIR's designation of a particular adverse environmental effect as 'significant' does not excuse the EIR's failure to reasonably describe the nature and magnitude of the adverse effect"); *Berkeley Keep Jets Over the Bay Com. v. Board of Port Cmrs.* (2001) 91 Cal.App.4th 1344, 1371 ("simply labeling the effect 'significant' without accompanying analysis of the project's impacts ... is inadequate to meet the environmental assessment requirements of CEQA")."

**Response:** Please refer to Master Response 4, and the Recirculated EIA.

**299-7:** The commenter states, "The Draft EIA Fails to Adequately Analyze NOx emissions from Flaring. The Draft EIA refers to the air quality analysis in the Standard Regulatory Impact Assessment ("SRIA") as the basis for its estimates of criteria pollutants.<sup>28</sup> In the SRIA, CARB estimated emissions from flaring at digesters. The Draft EIA states that "[S]taff assumed that about 10% of methane produced is flared. Hence, flaring is the only source of local emissions used in estimating emissions from dairy biomethane." Ammonia in flared biogas causes increased NOx emissions.<sup>30</sup> However, the SRIA only used air district emission factors for flares.<sup>31</sup> Thus, the EIA fails to adequately analyze NOx emissions from flaring biogas. A revised EIA should recalculate digester flare emissions using flared biogas."

**Response:** Staff referenced the San Joaquin Air Pollution Control District's emission factor for Flares at Digester Operations (Not located at a Major Source), thereby using the most conservative emission factor specific to biogas listed in the District's flaring rule. Please refer to Master Responses 2 and 4, and the Recirculated EIA.

**299-8:** The commenter states, "The Draft EIA Fails to Adequately Analyze NOx emissions from Biomethane Electric Fuel Pathways. In its evaluation of Project-impacts related to biomethane electric vehicle fuel pathways, the Draft EIA indicates that "[T]he LCFS modeling assumes use of fuel cells to generate this electricity, which do not rely on combustion." Thus, staff calculate near zero NOx from electricity production of biomethane using an emission factor of 0.00085 tons/GWh.<sup>33</sup> However, this assumption underlying the analysis is questionable for multiple reasons. First, to date, CARB has certified only one biomethane electric vehicle fuel pathway that relies on Bloom fuel cells at a dairy to produce electricity, and that is at Bar 20, one of the largest dairies in California. By contrast, CARB has certified 19 biomethane electric vehicle fuel pathways that rely on internal combustion engines.

Second, Bloom fuel cells are more expensive to purchase and maintain than internal combustion engines, and the San Joaquin Valley Unified Air Pollution Control District has declined to find that fuel cells are cost-effective and thus Best Available Control Technology ("BACT"). Instead, the District has issued Authority to Construct Permits and found that internal combustion engines represented BACT. Therefore, CARB lacks substantial evidence to

support its unfounded assumption Bloom fuel cells will be used for electric vehicle fuel pathways. And while Bar 20 has permits for and operates fuel cells, there is no record on the Air District public notice log of any BACT determination for fuel cells at Bar 20.

Furthermore, the most recent internal combustion engine Authority To Construct Permit from the San Joaquin Valley Air District found that fuel cells were not cost effective and not BACT. Instead, the Air District required internal combustion engines as BACT. This approach is inconsistent – on the one hand, the Air District does not consider fuel cells as BACTs or cost effective and does not require fuel cells as BACT; on the other hand, CARB's analysis of impacts from digester projects that generate electric vehicle fuel contends that all such fuel pathways will rely on fuel cells to emit near-zero NOx.

NOx emissions from digester-related internal combustion engine used for electric vehicle fuel pathways are significant. For example, the Lakeview Dairy Biogas project in Kern County uses two internal combustion engines to produce over 1,000 kW of electricity on-site. And this project, as permitted by the Air District with required internal combustion engines, still emits 4.58 tons/year of NOx, 1.98 tons/year of PM2.5, and 3.18 tons/year of VOC after the imposition of BACTs as required by the State Implementation Plan. Compared to a natural gas combined cycle power plant in Avenal, also permitted by the Air District, the Lakeview digester project produces much higher levels of NOx, sulfur oxides (SOx), and VOC emissions per unit of electricity generated. However, unlike the natural gas plant, Lakeview Dairy Biogas is not required to purchase emission reduction credits for the air pollution emitted. This facility, and others like it with internal combustion engines, emit significant levels of NOx even after Clean Air Act-required controls. Therefore, the Draft EIA wrongfully omitted analysis NOx emissions from these facilities and fuel pathways.

In summary, given that (a) the Proposed Amendments increase carbon intensity benchmarks, and thus credit prices, and will incentivize more pathways for electricity from internal combustion engines, (b) CARB does not require fuel cells as mitigation, and (c) the San Joaquin Valley Unified Air Pollution Control District does not consider fuel cells as BACT, it is reasonably foreseeable that more digesters with IC engines will apply for such pathway certifications. For these reasons, the Draft EIA must be revised to correct this error and to evaluate NOx impacts from biomethane electric vehicle fuel pathways that rely on IC engines.”

**Response:** Please refer to Master Response 4, and the Recirculated EIA.

**299-9:** The commenter states, “The Draft EIA Fails to Adequately Analyze NOx emissions after 2039. The Draft EIA fails to analyze NOx emissions from biomethane fuel pathways after 2039, despite authorizing crediting for biomethane fuel pathways well beyond 2039. The Draft EIA’s PM2.5 and NOx emissions analysis explicitly relied on the Standardized Regulatory Impact Assessment (“SRIA”), including Tables 47-59. Table 47 of the SRIA assumes no hydrogen or electricity will be produced from dairy biomethane after 2039. However, as discussed in Section I, the Proposed Amendments explicitly authorize CARB to certify electricity and hydrogen fuel pathways well beyond 2039. The Draft EIA’s analysis of NOx emissions is grounded on an inaccurate assumption. The Draft EIA must evaluate the impacts of NOx

emissions over the time period during which these emissions will occur. 14 Cal. Code Regs. § 15126 (“[a]ll phases of a project must be considered when evaluating its impact on the environment”); *Make UC a Good Neighbor v. Regents of University of California* (2023) 88 Cal.App.5th 656, 667; *In re Bay-Delta etc.* (2008) 43 Cal.4th 1143, 1169.”

**Response:** Please refer to Master Response 4, and the Recirculated EIA.

**299-10:** The commenter states, “The Draft EIA fails to adequately analyze Project-related ammonia emissions associated with digestate. Aside from omitting analysis of the impacts resulting from factory farm expansion and use of anaerobic digesters described above, the Draft EIA presents an incomplete analysis of the project’s ammonia impacts because it fails to evaluate the impacts from production and application of substantial increases of anaerobic digestate. Apart from the size of the herd, the production and application of digestate to agriculture land is much more polluting and more hazardous to public health compared to raw manure. CEQA requires an analysis of these impacts.

The Draft EIA’s conclusion that the Project may have significant air quality impacts—without consideration of the extent and severity of those impacts—cannot cure this deficiency. Merely stating that an impact will occur is insufficient; an EIR must also provide “information about how adverse the adverse impact will be.” *Cleveland Nat’l Forest Foundation*, 3 Cal.5th at 514; *Berkeley Keep Jets Over the Bay Com.*, 91 Cal.App.4th at 1371. This information, of course, must be accurate and consist of more than mere conclusions or speculation. *Id.* The Draft EIA’s analysis of air quality impacts fails to fulfill this mandate in several instances.”

**Response:** Please refer to Master Response 4, and the Recirculated EIA.

**299-11:** The commenter states, “Anaerobic digestate results in higher emissions in part because anaerobic digestion decomposes the waste into smaller molecules, which allows it to more easily volatilize into the atmosphere. In this way, digestate results in significant releases of higher amounts of ammonia, a toxic gas, and NOx emissions than unprocessed manure. The Draft EIA concludes that long-term operational air quality impacts related to PM2.5 and NOx would be significant and unavoidable. We do not disagree that the Project’s emissions would be significant. However, the DEIR fails to disclose the extent and severity of this impact. A revised analysis must provide more details about the impacts and must account for increased application of digestate on agricultural land. *Cleveland Nat’l Forest Foundation*, 3 Cal.5th at 514; *Berkeley Keep Jets Over the Bay Com.*, 91 Cal.App.4th at 1371.

Furthermore, the Draft EIA’s conclusion that odor impacts from ammonia emissions would not be significant is unsupported. As explained in the Rosenfeld Comments, ammonia emits a strong odor that is easily detectable at low concentrations and contributes to irritation such as immediate burning of the nose and respiratory tract. In addition, anaerobic digestion significantly increases the amount of ammonia emissions compared to a dairy without an anaerobic digester.

As discussed above, ammonia also contributes to the formation of PM<sub>2.5</sub> (e.g., formation of ammonium nitrate), exposure to which is linked to a variety of serious health problems). CARB's own ammonia data show that ammonia contributes to PM<sub>2.5</sub> formation. Therefore, CARB must include a full evaluation of ammonia emissions.

**Response:** Please refer to Master Responses 4 and 5, response to comment 313-4, and the Recirculated EIA.

**299-12:** The commenter states, "Health and safety effects, including adverse health impacts from air pollutants, may constitute significant environmental impacts for the purposes of CEQA. See, e.g., *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 517-22; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-21. 14 CCR § 15126.2(a). Here, as discussed above, in the anaerobic digestion process substantial amounts of ammonia are produced as a byproduct.

In addition to the health risks imposed by increased local emissions, emissions and impacts on nearby communities, ammonia also contributes to the formation of PM<sub>2.5</sub>. In the United States, ammonia from agriculture accounts for the formation of almost one third of PM<sub>2.5</sub>. Exposure to PM 2.5 is linked to premature deaths in people with heart or lung disease, heart attacks, irregular heartbeat, aggravated asthma, decreased lung function and long-term lung conditions including cancer. Yet, the Draft EIA's analysis of the Project's public health and safety impacts is cursory.<sup>57</sup> While the Draft EIA discloses that an increase in emissions of criteria pollutants associated with production of biofuels is possible, it falls short of actually evaluating the potential health impacts of these emissions. Instead, once again the Draft EIA concludes that impacts would be significant, but then fails to describe the severity of those impacts.

Harmful emissions from expanded use of anaerobic digesters disproportionately affect communities in close proximity to dairies, which are often comprised of lower income residents. Lower-income residents are often more vulnerable to the adverse effects of these emissions due to various factors, such as lack of resources, inadequate infrastructure, and the concentration of anaerobic digester facilities near these populations."

**Response:** Please refer to Master Responses 4 and 5, and the Recirculated EIA.

**299-13:** The commenter states, "(c) Impacts Outside of California. The Draft EIA fails to analyze the Proposed Amendments' impacts outside of California. CEQA requires public agencies to analyze the potentially significant impacts of a proposed project that may occur in "the area which will be affected by [the] proposed project." 14 Cal. Code. Regs. § 15360; Public. Res. Code § 21060.5. CARB itself acknowledged its obligation to analyze out-of-state impacts in conducting its CEQA review for the Renewable Electricity Standard in 2010. Factory farms across the nation are eligible for LCFS credits, and are thus incentivized by the Proposed Amendments to install anaerobic digesters and expand existing herds, just as in-state factory farms are. The Proposed Amendments will therefore have adverse environmental impacts out-of-state. CARB's refusal to analyze such impacts is clear legal error."

**Response:** Please refer to Master Response 3 and 5. As discussed on pages 57-59 of the Recirculated EIA, the LCFS calculates emission reductions on a full lifecycle basis for the fuel production, transport, and use; therefore, GHG emission reductions occur both in California and out-of-state. Staff calculated GHGs associated with each scenario. As discussed in Master Response 3, out-of-state operations are too speculative for any further evaluation.

**299-14:** The commenter states, “The Draft EIA fails to adequately analyze Project-related discharges to groundwater associated with digestate. The Draft EIA’s analysis of increased digestate on groundwater is equally flawed. As explained in the Rosenfeld Comments, anaerobic digestion breaks down waste into a digestate of smaller molecules that makes digestate more susceptible to leaching into the groundwater. Anaerobic digestion also leads to higher concentrations of ammonia in digestate, which can subsequently convert to nitrate.

“[N]itrate pollution leading to groundwater contamination is much more likely to occur with anaerobically digested digestate, as the ammonia is more readily available for conversion into nitrate, which can then leach into groundwater.” Nitrate contamination in drinking water and food can lead to severe illness in infants, such as the onset of blue baby syndrome, also known as methemoglobinemia. Yet, the Draft EIA fails to include any analysis of these potential impacts.

Although the Draft EIA concludes that the Project’s long-term operational impacts to water quality are significant and unavoidable, the document lacks a thorough analysis of these impacts. As the Rosenfeld Comments explain, increased amounts of digestate have the potential to result in groundwater nitrate contamination, excessive accumulation of soil phosphorus, and eutrophication of surface waters from anaerobic digesters. These impacts to water quality and public health must be evaluated in a revised EIA. In summary, the Draft EIA fails to grapple with an analysis of all of the foreseeable, significant, direct and indirect environmental impacts of implementing the Proposed Amendments. As discussed above and in several comment letters from other stakeholders, these impacts include, but are not limited significant air quality, climate change, water quality, and public health impacts. Furthermore, as discussed below, the Draft EIA fails to identify feasible mitigation measures to minimize acknowledged significant impacts resulting from the project. A revised EIA must correct these deficiencies in order for the public and decision-makers to fully understand the Project’s impacts.”

**Response:** Please refer to Master Response 4 and the Recirculated EIA.

**299-15:** The commenter states, “The Draft EIA fails to identify any enforceable mitigation measures to lessen the severity of the Proposed Amendments’ significant impacts. If, as here, a lead agency determines its project will have one or more significant environmental effects, CEQA requires that agency to adopt all feasible mitigation measures to reduce the severity of those impacts. Public. Res. Code § 21002; Sacramento Old City Assn. v. City Council (1991) 229 Cal.App.3d 1011, 1027; POET, LLC, 218 Cal.App.4th at 734-35. Mitigation can take many forms, including avoiding the impact altogether by not taking a certain action or parts of an action and minimizing impacts by limiting the degree or magnitude of the action and its

implementation. 14 Cal. Code Regs., § 15370. Mitigation measures are only legally valid if they are fully enforceable. Public Res. Code § 21081.6(b); *Assn. of Irrigated Residents v. Kern County Bd of Supervisors* (2017) 17 Cal.App.5th 708, 752.

The Draft EIA's approach to mitigation measures is woefully deficient. CARB has not proposed any enforceable mitigation measures to be incorporated as part of the Proposed Amendments. The Draft EIA's reasoning for doing so is based on a fundamental legal error. Because CARB has no authority over the projects and actions that will be undertaken in response to the Proposed Amendments, the Draft EIA asserts that CARB has no obligation to incorporate feasible mitigation measures into the Proposed Amendments themselves. CARB does have jurisdiction over the Proposed Amendments, and it must include measures that will reduce or eliminate the reasonable foreseeable impacts of the Amendments. 14 Cal. Code Regs. § 15126.4.

The Draft EIA's illogical reasoning is compounded by its unsupported assumption that the projects it identifies as reasonably compliance responses will be subject to future CEQA review. Factory farm expansions and digester installations are commonly considered exempt from CEQA review by the local agencies in Central Valley that routinely approve such projects. The Leadership Counsel proposes numerous feasible mitigation measures CARB can, and must, incorporate into the Proposed Amendments to lessen the severity of its significant impacts associated with digester installation and factory farm expansion."

**Response:** Please refer to response to comment 299-16, Master Response 1, and the Recirculated EIA.

**299-16:** The commenter states, "The Draft EIA's approach to mitigation measures is legally erroneous. CARB has not proposed any enforceable mitigation measures, despite the Draft EIA concluding that the Proposed Amendments will have numerous significant environmental impacts. According to the Draft EIA, CARB—one of the most powerful regulators in the State—has no ability or authority to mitigate the impacts associated with the Proposed Amendments. In attempting to off-load its obligation to impose feasible mitigation measures, CARB confuses the project before it—the Proposed Amendments—with the projects (e.g. anaerobic digesters, factory farm expansions) that will be undertaken as a result of the Proposed Amendments. Because CARB does not have authority over these projects, the Draft EIA asserts CARB has no ability to incorporate feasible mitigation measures within the Proposed Amendments.

However, CEQA requires CARB to determine whether changes or additions can be made to the Proposed Amendments themselves that will reduce the severity of their significant environmental impacts. 14 Cal. Code Regs. § 15126.4(a)(2) ("[i]n the case of the adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design"). CARB clearly has the authority to make changes or additions to its own Proposed Amendments, which will lessen the severity of their environmental impacts. Its failure to even consider doing so constitutes grave legal error."

**Response:** Chapter 4.0 of the Draft EIA takes a programmatic approach in assessing the types of adverse environmental effects that could occur for each resource area identified in Appendix G of the CEQA Guidelines. "The degree of specificity required in an [EA] will correspond to the degree of specificity involved in the underlying activity that is described in the [EA]." (Guidelines, § 15146.) CARB's general level of analysis of the potential mitigation measures applicable to the Proposed Amendments was appropriate given the broad scope of the program.

In addition, as provided in the EIA, CARB lacks legal authority to mandate mitigation for potential infrastructure and development projects that could be carried out in response to the Proposed Amendments. CARB does not have jurisdiction over land use permitting of any potential development associated with the compliance responses. As such, CARB lacks the authority to make the mitigation measures fully enforceable. Local permitting and land use agencies have the authority to adopt mitigation measures in connection with specific proposed activities, but CARB cannot guarantee whether or to what extent any given mitigation measure will be adopted or implemented. Therefore, in lieu of speculation, CARB provides a suite of mitigation measures that can be adopted to minimize impacts, while taking the conservative approach in its post-mitigation significant determinations that potentially significant impacts could be significant and unavoidable even with the mitigation prescribed throughout Chapter 4.0. The goal in disclosing information regarding public decision making is to encourage informed public participation. (*San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 653.) "That an EIR's discussion of mitigation measures might be imperfect in various particulars does not necessarily mean it is inadequate." (*Laurel Heights Improvement Assn. v. Regents of University of California, supra*, 47 Cal.3d at p. 408.) Where impacts are found to be potentially significant, recognized mitigation practices are recommended. These mitigation measures are not limited in scope, as project-specific mitigation can and should be developed for future projects using site-specific information, where applicable.

For mitigation measures to be implementable under CEQA, they must be feasible. Feasibility, however, is uncertain at this stage. "[F]easible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." (CEQA Guidelines, § 15364.) It is foreseeable that future projects may incorporate project design features intended to reduce adverse impacts or have estimated impacts that do not trigger the need for mitigation. However, the EIA recognizes that future projects implementing the compliance responses to the Proposed Amendments are unknown, and without knowing the specifics of those projects, it would be speculative for CARB to mandate mitigation measures for future uncertain environmental consequences. The commenter's suggestions include changes to regulatory design that may be more appropriately viewed as suggested project alternatives, since they would change the design of the program rather than operate as additional measures for reducing impacts or as conditions of approval. The EIA addresses whether regulatory changes or additions could be made to the Proposed Amendments to reduce significant impacts through project alternatives analysis. Chapter 7.0 of the Draft EIA evaluates a reasonable range of alternatives including the No Project, the Focused Crediting Scenario, and 25 percent

CI Reduction in 2030 alternatives. Please also refer to response to comment 299-18 below. The environmental impacts, as compared to the Proposed Amendments, are evaluated and disclosed. As noted in the Draft EIA, future project-level evaluations would be undertaken for projects under the Proposed Amendments that could have potentially adverse environmental consequences. To the extent the comment asserts that CARB failed to analyze a reasonable range of alternatives that included the suggestions provided in their comment, please refer to response to comment R16-8.

In regard to herd size expansion as a compliance response to the Proposed Amendments, please refer to Master Response 1. No edits to the Draft EIA are needed in response to this comment and no further response is required.

**299-17:** The commenter states, “CARB’s EIA process is likely the last opportunity for environmental review and mitigation of the impacts of factory farm expansion and digester installation. CARB’s faulty reasoning is compounded by its unsupported assumption that the projects which will be undertaken as a result of the Proposed Amendments will be subject to future CEQA review and, thus, the obligation to mitigate significant impacts. However, in the Central Valley, where factory farms are predominately located, the installation of anaerobic digesters and the expansion of factory farms are commonly considered by local agencies to be exempt from CEQA review on the grounds that the projects are ministerial or qualify for a categorical exemption. Therefore, with respect to these projects, the Draft EIA process is likely the last stop for both detailed environmental review and the imposition of meaningful mitigation measures.

For example, Kings County has adopted local guidelines that inform its implementation of CEQA.<sup>65</sup> Included in these guidelines are a list of categories of projects that are exempt from CEQA review because they are subject to ministerial review. These ministerial projects include “Site Plan Reviews.” In 2023 alone, Kings County approved two anaerobic digester projects, exempting them from CEQA review on the grounds they were subject to ministerial review.<sup>66</sup> Kings County thus had no obligation under CEQA to analyze and mitigate the adverse impacts associated with either of these projects. Other jurisdictions have exempted digester projects from CEQA review—and the obligation to mitigate significant impacts—on the grounds that these projects qualify for a Categorical Exemption. For example, Tulare County issued a Notice of Exemption in 2020 for a pipeline construction project intended to transport dairy biogas on the grounds the project qualified for the Class 1 (minor alterations to existing facilities) and Class 3 (new construction of small structures) Categorical Exemptions.<sup>67</sup> Tulare County also filed a Notice of Exemption to expand an existing biogas pipeline to connect an additional dairy digester to existing infrastructure. Other jurisdictions where similar projects have been exempted from CEQA review recently include Merced, Stanislaus, and Kern.

Tulare County also filed multiple Notices of Exemption in 2022 for factory farm herd consolidation projects, including a project that increased an existing herd size by almost 3,000 animal units.<sup>68</sup> Kings County filed a Notice of Exemption for a project that expanded the herd size of an existing calf ranch in 2023 on the grounds that the underlying approval was ministerial.



CARB's attempt to justify its refusal to adopt any enforceable mitigation measures on the grounds that the projects incentivized by the Proposed Amendments will be subject to future CEQA review fails. CARB's discretionary approval of the Proposed Amendments is likely the last chance to rigorously analyze and mitigate the significant impacts associated with many future factory farm expansions and digester development projects. CARB must use its authority as the regulatory agency tasked with crafting the LCFS to ensure all identified significant impacts are mitigated to the extent feasible."

**Response:** Please refer to Master Response 1 and the Recirculated EIA. The comment states that in the Central Valley, where factory farms are predominately located, the installation of anaerobic digesters and the expansion of factory farms are commonly considered by local agencies to be exempt from CEQA review on the grounds that the projects are ministerial or qualify for a categorical exemption. This is a speculative statement, as the size of an anaerobic digester and its foreseeable impacts on the environment are unknown at this programmatic stage. In addition, if a future digester or pipeline construction project were potentially exempt from CEQA, a categorical exemption is not available if significant cumulative impacts from projects of the same type will result or if there is a reasonable possibility that a project will have a significant effect on the environment due to unusual circumstances. (CEQA Guidelines, § 1500.2(b)-(c)). . Otherwise, a project-level CEQA evaluation would be undertaken where impacts would be disclosed and mitigated to minimize impacts.

**299-18:** The commenter states, "CARB must adopt feasible mitigation measures that will lessen the severity of the Proposed Amendments' impacts on factory farm expansion and digester installation. CEQA explicitly acknowledges that feasible mitigation measures can include changes that are incorporated into the regulation itself. 14 Cal. Code Regs. § 15126.4(a)(2). Each of the following mitigation measures is feasible and within CARB's authority to incorporate within the Proposed Amendments; CARB's failure to do so would constitute a clear violation of CEQA:

- Limit the generation of credits for fuel pathway holders for biogas derived from livestock manure to the volume of feedstock at each associated dairy or livestock operation on January 1, 2017, or on the date the pathway was certified, whichever is earlier.
- Restrict the generation of credits for fuel pathway holders for biogas derived from livestock manure located in Disadvantaged Communities as designation by the Office of Environmental Health Hazard Assessment pursuant to Senate Bill 535.69
- When calculating the carbon intensity of fuel derived from livestock manure, include all emissions of greenhouse gases generated from the production of the fuel and all emissions of greenhouse gases generated from the production of the feedstock. Update the carbon intensity of each pathway for fuel derived from livestock manure after making this calculation. These emissions include, but are not limited to,
  - o Enteric emissions;

- o Emissions from production and storage of feed, transport of feedstock, or fuel;
  - o Emissions resulting from digestate handling, composting, or treatment; and
  - o Emissions resulting from land application of manure or digestate.
- Disapprove any application for a fuel pathway that includes the use of biogas derived from livestock manure which does not provide all information and calculations used to determine carbon intensity, including but not limited to:
    - o Herd size;
    - o Volume of feedstock produced or used;
    - o Volume of biogas produced.
  - Make publicly available on CARB's website all information and calculations used to determine carbon intensity."

**Response:** CARB took a reasonable, programmatic approach to incorporate feasible mitigation measures into the Proposed Amendments. Please refer to response 299-16.

As a threshold matter, the commenter suggests potential measures to mitigate "farm expansion and digester installation." Farm expansion is not a reasonably foreseeable compliance response to the Proposed Amendments. Please refer to Master Response 1 and the Recirculated EIA.

Some of the policy proposals the comment identifies as mitigation measures would not actually change the Proposed Amendments, or even reflect a change to the current LCFS regulation in effect. Specifically, the proposal that CARB not approve fuel pathway applications that do not provide "all information and calculations used to determine carbon intensity" is not a proposal to change the existing regulation (or the Proposed Amendments).<sup>19</sup> Similarly, the proposal that CARB "include all emissions of greenhouse gases generated from the production of the fuel and all emissions of greenhouse gases generated from the production of the feedstock" generally reflects the existing framework and requirements of the LCFS. Some GHG emissions that the commenter identifies to be included in the carbon intensity calculations for these fuels (e.g., enteric emissions associated with livestock) are appropriately excluded from the LCFS project boundary because manure is considered to be a waste feedstock. Please refer to the final paragraph of Master Response 5.

The remainder of the policy proposals the comment identifies as mitigation measures involve changes to the Proposed Amendments themselves. For mitigation measures to be

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<sup>19</sup> Both the current and proposed amendment versions of the applicable regulatory sections title 17, Cal. Code Regs., §§ 95488.6 and 95488.7 require applications for the fuel pathways at issue to include the information and calculations needed to determine fuel life cycle carbon intensity.

implementable under CEQA, they must be feasible. “Feasibility’ under CEQA encompasses a range of considerations, including ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.” (*California Natural Gas Vehicle Coalition v. State Air Resources Board* (2024) 105 Cal.App.5th 304, citing *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17.) Courts have recognized that policy considerations are relevant to the feasibility analysis, and that disagreements over legitimate policy determinations are not a basis for setting aside an EIR’s determinations. (*Id.* at 20; *San Diego Citizen Group*, *supra*, at 17.) CEQA does not require the discussion and incorporation of mitigation measures that would defeat the policy objectives identified in the CEQA document. (*California Natural Gas Vehicle Coalition v. State Air Resources Board* (2024) 105 Cal.App.5th 304.)

The policy proposals the comment identifies as mitigation measures implicate the Proposed Amendments’ objectives and would present a new alternative to the project as proposed. As such, those proposals should be analyzed as alternatives to the Proposed Amendments rather than mitigation measures. To the extent the comment is about whether the EIA analyzed a reasonable range of alternatives, please refer to response to comment R16-8.

To the extent the commenter’s suggestions are considered to be mitigation measures, none would be feasible or meet the Proposed Amendments’ project objectives provided in the EIA.

Limiting the generation of credits for fuel pathway holders for biogas derived from livestock manure to the volume of feedstock at each associated dairy or livestock operation on January 1, 2017, or the date the pathway was certified, whichever is earlier, would create an arbitrary cap on fuel pathway participation in the LCFS. Similar to the biofuels cap proposed by some stakeholders and analyzed under Alternative 2 in the EIA, this would not be responsive to the direction in the 2022 Scoping Plan Update, as capturing methane from dairies is one of the primary measures for achieving the State’s 2045 greenhouse gas reduction targets and SB 1383 (Lara, Chapter 395, Statutes of 2016) methane reduction target. LCFS credits for these projects incentivize investment in upfront capital costs. Limiting crediting to feedstock volumes present in 2017 or earlier could reduce the effectiveness of incentives for the development of new anaerobic digester projects, which could result in fewer such projects and fewer associated methane emissions reductions. Without the installation of new anaerobic digesters anticipated under the Proposed Amendments, California would not be able to meet its 2030 dairy and livestock sector methane emissions reduction goal. Thus, the limitation proposed would be infeasible because it would be inconsistent with the project’s objectives.

To the extent that the proposed mitigation measures regarding lifecycle analysis for the Proposed Amendments would actually change to the project, they are infeasible as inconsistent with the project’s objectives. The Proposed Amendments incorporate amendments to achieve an objective of updating the emission factors and life cycle assessment modeling tools. With regard to the life cycle analysis boundaries established by CARB for use in dairy and swine manure biomethane pathways, please refer to Master Response 5. The current regulation and Proposed Amendments require fuel pathway inputs and life cycle analysis reports for Tier 2 pathways to be posted for public comment, with

relevant project-specific information, with redactions where necessary to protect confidential business information. Fuel pathway inputs are verified by third-party verifiers before certification and following certification on an annual basis to confirm the accuracy of the carbon intensity calculations. For this reason, the proposed mitigation measure to make publicly available all information and calculations for carbon intensity is not feasible because it would be partially duplicative of existing requirements and partially contrary to legal protections for confidential business information.

The proposed mitigation measure to limit the generation of credits for fuel pathway holders for biogas derived from livestock manure located in disadvantaged communities designated by the Office of Environmental Health Hazard Assessment is likewise infeasible. Significant portions of the agricultural production land in the Central Valley are located in areas identified as disadvantaged communities. Because capturing methane from dairies is one of the primary measures for achieving the State's 2045 greenhouse gas reduction targets and SB 1383 methane reduction target, restricting LCFS credit generation from existing or future digester projects located in these areas would conflict with State GHG emissions reduction goals, the associated direction reflected in the 2022 Scoping Plan Update, and CARB's project objective to align the LCFS regulations with that Scoping Plan update. As discussed in the EIA, communities surrounding poorly managed farms may be adversely impacted by air and water quality impacts. Local and state laws exist to prevent and otherwise address those potential adverse impacts through the administration of agencies with authority to enforce those laws. In addition, section 95495 of the LCFS regulation (title 17, CCR) lists "Credits or deficits were generated or transferred in violation of ... other laws, statutes or regulations" among specified bases for potential administrative invalidation or other adjustment of credits or fuel pathways. Please refer to Master Response 4.

**299-19:** The commenter states, "The Draft EIA fails to analyze all reasonable alternatives by which the State can achieve its methane reduction goals. As a preliminary matter, the Draft EIA's failure to disclose the extent and severity of the Project's broad-ranging impacts necessarily distorts the document's analysis of Project alternatives. As a result, the alternatives are evaluated against an inaccurate representation of the Project's impacts. Proper identification and analysis of alternatives is impossible until Project impacts are fully disclosed.

CEQA requires CARB's Draft EIA to describe a range of "reasonable alternatives to the project," which would "attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effect of the project," and evaluate the "comparative merits" of the alternatives. 14 Cal. Code. Regs. § 15126.6. The discussion of mitigation and alternatives is "the core" of CEQA analysis. *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.

The Draft EIA's alternatives analysis presents a series of false choices, that rests on the assumption that the only method by which the State can achieve its methane emissions reduction goals is through the LCFS's indirect, incentive-based regulation. Each alternative scenario is simply a version of the LCFS with different requirements than the Proposed Amendments. The Draft EIA fails to analyze a scenario where CARB uses its regulatory

authority to directly regulate methane emissions from factory farms, as required by Health & Safety Code §§ 38562.5, 39730.7(b)(1), thereby achieving the State's methane reduction goals while reducing the incentive for factory farms to expand their environmentally damaging operations.

The Draft EIA must be amended to include analysis of an alternative scenario with the following components: (1) elimination of LCFS credits for fuel derived from manure methane emissions; (2) implementation of direct regulation of factory farms to achieve the same level of methane reduction CARB currently contemplates will be achieved through the LCFS; and (3) decrease the stringency of the LCFS' carbon intensity requirement, to ensure the elimination of credits for fuel derived from manure methane emissions does not affect credit prices negatively and risk the State failing to achieve its fuel decarbonization goals.

The State Legislature has granted CARB the regulatory authority to directly regulate the major sources of methane emissions within the State, including the dairy and livestock industry, landfills, and the oil and gas system. To date, CARB has taken action to directly regulate landfills (the Landfill Methane Regulation, Cal. Code of Regs., tit. 17 §§ 95460, et seq.) and the oil and gas system (the Oil and Gas Methane Regulation, Cal. Code of Regs., tit. 17, §§ 95665-77). However, CARB has yet to directly regulate the dairy and livestock industry—the largest source of methane emissions within the State. The State Legislature, through Senate Bill 1383, mandated that CARB adopt regulations and mandated that CARB implement such regulations beginning in January of 2024 provided that CARB make certain findings. As CARB itself has stated, the agency shall adopt regulations and has authority to implement the regulations, “provided that CARB, in consultation with CDFA, determine the regulations are technologically and economically feasible, cost-effective, include provisions to minimize and mitigate potential leakage, and include an evaluation of the achievements made by incentive-based programs.”

CARB itself acknowledged in its 2022 Scoping Plan that direct regulation of the sources of methane emissions is integral to the State's methane emissions reduction strategy. CARB's stated strategy for reducing the emissions of short-lived climate pollutants, most notably methane, is a “carrot-then-stick” approach. This approach begins with the incentive-based, indirect regulations, such as the LCFS (the “carrot”), and then transitions into direct regulation, similar to those that have been promulgated for the landfill and oil and gas systems (the “stick”). The 2022 Scoping Plan ultimately recommends the carrot and stick approach for manure methane. CARB acknowledged that the dairy and livestock industry must “achieve considerable methane emissions reductions to meet the 2030 target,” which will “require implementation of additional methane emissions reductions strategies.”

Despite having the mandatory duty and authority to directly regulate methane emissions from the dairy and livestock industry, and explicitly stating that such regulation is integral to the State's emissions reduction strategy, CARB fails to analyze an alternative scenario where this direct regulatory authority is applied. The only alternatives CARB considers are those where the LCFS is the primary, if not sole, mechanism for achieving methane emissions reductions from the dairy and livestock industry. CARB has the authority to simultaneously reduce the

methane emissions and adverse environmental impacts from factory farms, while not risking the State's fuel decarbonization goals. CARB's failure to consider such a scenario constitutes clear legal error.

**Response:** Please refer to Response to Comment 1-2.

**299-20:** The commenter states, "Due to the foregoing and numerous adverse environmental impacts not fully disclosed and properly analyzed in the Draft EIA, the Leadership Counsel opposes the Project as proposed. Additional alternatives and mitigation measures are essential to avoid the Project's significant adverse impacts. The Leadership Counsel respectfully urges the Air Resources Board to delay further consideration of this Project until the agency recirculates a revised Draft EIA that fully complies with CEQA and the CEQA Guidelines.?"

**Response:** Please refer to Response to Comment 1-2 and the Recirculated EIA. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required

## Comment Letter 302

2/20/2024

Julian Lake; Adrian Covert; Adam Klauber; Jared Asch  
Bay Area Council

**302-1:** The commenter states, “On behalf of the Bay Area Council and our partners, we respectfully request the California Air Resources Board (CARB) consider specific actions in the Low Carbon Fuel Standard (LCFS) update to advance the production of Sustainable Aviation Fuels (SAF) in furtherance of California's 2045 climate goals. Specifically, we ask that CARB cap carbon intensity ratings for new Sustainable Aviation Fuel (SAF) production facilities; provide equal access expansion of book and claim accounting to SAF; leverage LCFS provisions to realize additional SAF air quality benefits beyond GhG emissions; and that CARB reconsider its proposal to regulate fossil jet fuel for intrastate flights.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to the Recirculated EIA.

**302-2:** The commenter states, “The CARB 2022 Scoping Plan establishes the goal of using SAF to meet 80 percent of all aviation fuel demand by 2045, up from less than one percent today. Meeting this ambitious goal will require unprecedented investments in new infrastructure and the processing of many thousands of tons of feedstock. SAF refineries are large infrastructure projects requiring substantial financing, and the inclusion of CARB's renewable fuel refinery CI performance thresholds in commercial contracts is an increasingly important tool for making these projects pencil. Models used for the generation of price support mechanisms such as the Low Carbon Fuel Standard (LCFS) credit and the Blenders Tax Credit (BTC) rely on CI as a key metric for credit valuation and generation. However, under current rules, CARB may change the official CI for SAF projects at any time, undermining the value of the BTC and the LCFS credit that underpins project feasibility. This uncertainty acts as a disincentive to investors and is an obstacle to achieving the state's SAF production goals and broader emissions targets.

To address this challenge, CARB should consider opening a 10-year window during which time SAF refinery projects would be allowed to keep, for a period of 20 years, the CI determination made by CARB using the GREET methodology at the time of the project's Final Investment Decision (FID). To ensure the baseline CI determined at FID is continuously met, producers should agree to re-testing on a regular biannual cadence. By better aligning CI incentives with asset lifespans, CARB would provide the predictability necessary for securing the large-scale financing needed to jump-start this important new industry.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to the Recirculated EIA. The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment's potentially significant physical impacts on the

environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comment document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**302-3:** The commenter states, “We commend CARB’s current policy supporting book and claim accounting for low-CI electricity and RNG inputs for low-CI hydrogen production, as well as their initiative to expand access through power purchase agreements (PPAs). Nevertheless, we advocate for equal access expansion to Sustainable Aviation Fuel (SAF). Both low-CI hydrogen and SAF play pivotal roles in displacing hard-to-electrify sectors like aviation, as outlined in the 2022 CARB Scoping Plan. However, existing LCFS rules tend to disadvantage SAF in comparison to hydrogen due to limited access to emissions reductions from process energy, such as low-CI electricity and RNG. This incongruity undermines state objectives for SAF uptake and aviation decarbonization, necessitating CARB’s intervention to ensure equitable treatment between these future fuels.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to the Recirculated EIA. The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comment document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**302-4:** The commenter states, “Furthermore, we underscore the critical importance of encouraging the long-term adoption of SAF by leveraging LCFS provisions to realize additional air quality and climate benefits. Notably, while light and medium/heavy-duty transportation are expected to electrify within decades, aviation’s transition to decarbonization will be more prolonged, with SAF anticipated as the primary lever. CARB must recognize and account for the substantial positive externalities associated with SAF substitution for fossil jet fuel and devise mechanisms within the LCFS to drive SAF adoption. Additionally, considerations such as the air quality benefits of SAF, particularly in reducing fine particulate matter, must be addressed. Equally significant are the environmental justice concerns raised by communities living near airports, urging CARB’s support for SAF as a means to mitigate the disproportionate health impacts of fossil jet fuel combustion. It is only through actual SAF adoption that these air quality benefits might be realized. Given these multifaceted benefits unique to SAF, we urge CARB to prioritize its utilization and explore innovative measures, such as credit multipliers or CO<sub>2</sub> equivalent metrics, to appropriately incentivize its adoption and address its distinctive contributions to climate mitigation.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to the Recirculated EIA. The EIA is not meant to address economic, social, or financial issues associated with the



Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment's potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comment document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**302-5:** The commenter states, "In addition, The Bay Area Council also expresses serious concern with a new proposal by the California Air Resources Board (CARB) to regulate "fossil jet fuel used for intrastate flights" as an obligated fuel under the LCFS Program. We do not believe this proposed change would result in increased SAF production, availability, or use in California, but it would lead to higher jet fuel prices. The primary barrier to increased SAF production and availability in California remains the higher cost of SAF for producers and buyers relative to conventional jet fuel and renewable diesel. The CARB proposal would not address this fundamental challenge or otherwise meaningfully increase SAF supply or use. Instead, the Bay Area Council suggests CARB consider alternative incentive structures that can help close the price gap between SAF and Conventional Jet-A, alongside SAF-specific economic development programs and investments via GoBiz as previously encouraged by SB1383 and the SAF Coalition.

Additionally, the intra-state flight proposal seeks to regulate jet fuel and reduce emissions from aviation, both of which are pre-empted under federal law - a fact that CARB recognized when it exempted jet fuel in 2018. Aviation has unique demands for reliability and consistency with approved fuel specifications for the safe operation and maintenance of aircraft. Accordingly, while the EPA is the primary federal regulator for on-highway, non-road, and marine fuels, under 42 U.S.C. § 7545, the FAA has the authority to establish standards for composition and chemical or physical properties of jet fuel or to eliminate aircraft emissions (49 U.S.C. § 44714). The FAA retains federal jurisdiction over such fuels even if used for intrastate flights. These statutory authorities establish clear and broad federal authority for regulating jet fuel and aircraft engine emissions that pre-empts California from regulating fossil jet fuel under the LCFS program. We ask that CARB reconsider this aspect of the proposed regulation and maintain the exemption for jet fuel from regulation under the LCFS program."

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to the Recirculated EIA. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

### Comment Letter 303

2/20/2024

Jane Sadler; Kyle Clark-Sutton  
RMI

**303-1:** The commenter states, “The proposed addition of intrastate jet fuel to the LCFS will require access to hydrogen as a feedstock for sustainable aviation fuel.

In the Proposed 2024 LCFS Amendments, CARB suggests eliminating the exemption for intrastate fossil jet fuel. We applaud this expansion of the program and suggested it as a lesson for other LCFS states to learn from in a recent policy memo. However, adding restrictions to electrolytic hydrogen as a feedstock in the same rulemaking is counterproductive to this action.

While most sustainable aviation fuel (SAF) that is currently on the California market is made from lipids and biofeedstocks, it is unlikely that this pathway will be able to scale to meet the sector’s low carbon fuel needs. SAF made from biofeedstocks faces steep competition for those feedstocks (e.g. corn and soy) from other biofuels, biogenic carbon removal, bioenergy, and other end uses. Additionally, the scaling of these crop-based fuels comes with its own problems, including inefficient land use, increased food prices, and the undermining of the sustainability of the eventual fuel. In part due to these problems, SAF made from biofeedstocks is only expected to reach a global high of 8.9 billion gallons by mid-century, contributing to slightly less than 10% of the global aviation fuels market at that time. It is increasingly clear that biogenic SAF will not be able to scale to the level needed to meet decarbonization goal.

At the same time, the technology required for battery electric or hydrogen fuel cellpowered aircraft is still more than a decade away. Current battery densities for flight are less than 200 Wh/kg — acceptable for short haul flights but inefficient for longer hauls. Long haul electrification would require densities in excess of 350 Wh/kg, which may not be available until 2040. Hydrogen fuel cell technologies face similar challenges.

This leaves hydrogen-derived SAF as the best option for aviation decarbonization right now. Hydrogen-derived SAF is an emerging fuel, but the technology is well-understood and will be scalable as feedstock supply chains mature. It is imperative that SAF producers can access low-CI hydrogen--specifically electrolytic hydrogen that does not depend on biofeedstocks--to create the fuel necessary to participate in LCFS.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to Recirculated EIA. The comment does not address the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 304**

2/20/2024

Oscar Garcia  
Neste US, Inc.

**304-1:** The commenter states, “Avoid an arbitrary cap on feedstocks used to produce renewable diesel and SAF. Such a cap will have the unintended consequences of extending dependence on fossil fuels, exacerbating air quality challenges, and compromising the ability to decarbonize the aviation and maritime sectors.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to Master Responses 2 and 4 and the Recirculated EIA. The comment does not address the adequacy of the EIA and no edits to the Draft EIA are required in response to this comment. No further response is required.

**304-2:** The commenter states, "Neste agrees with CARB that a cap on feedstocks will have the following negative impacts on California’s most vulnerable residents:

- Increased dependence on fossil fuels (pg 102 of SRIA)
- Exacerbates existing air quality challenges due to higher NOx and PM (pg 102 of SRIA and pgs 118 and 124 of the ISOR)
- Will lead to worst health outcome among all scenarios modeled by CARB (pg 124 of ISOR)”

**Response:** The comment does not raise issues related to the adequacy of the environmental analysis but expresses support for the argument that a cap on feedstocks would result in negative impacts. Please refer to Section 3.A.1 of the Recirculated EIA for a discussion of air quality impacts related to the Proposed Amendments, including compliance responses associated with feedstocks. Also refer to Master Response 2.

**304-3:** The commenter states, “There is simply no data supporting the need for a cap on crop-based feedstocks. The Advanced Biofuels Association (ABFA) conducted a study that concluded, “To 2030, feedstock supplies available for use in the U.S. are more than enough to meet our forecast demand—after accounting for food.” In fact, data is showing that meat prices are dropping due to the production of renewable energy because more animal feed is being produced<sup>22</sup>. As part of the July 7th LCFS Workshop, CARB received compelling data showing that the Indirect Land Use Change (ILUC) factors are helping prevent deforestation and other land use issues. The ILUC factors also reduce credit generation from diesel produced from these feedstocks, something proponents of a cap are seeking. Neste therefore strongly opposes a cap, and strongly recommends that vegetable oils derived from newer crops and farming technologies should be accounted for in the LCFS. There is no data showing that crop-based feedstocks are affecting food prices, availability and overall land use.”

**Response:** Please refer to Master Response 2 for a discussion about land use changes associated with feedstock changes and the Recirculated EIA. The comment does not raise issues related to the adequacy of the environmental analysis, and no edits to the Draft EIA are required in response to this comment.

**Comment Letter 308**

2/20/2024

Kevin Welsh  
Airlines for America

**308-1:** The commenter states, “2. The air quality benefits attributed to the intrastate jet fuel obligation are inaccurate and overstated.

A4A and its members concur with CARB’s assessment that SAF has the potential to provide local air quality (LAQ) benefits (compared to conventional jet fuel) near airports. Significant academic and industry research has been conducted, including full scale static engine tests and flight tests have demonstrated lower Sulphur Oxides (SOx) and Particulate Matter (PM) emissions from SAF compared to conventional fossil jet fuel. However, we disagree with CARB’s analysis and presentation of future LAQ levels that implies reductions in jet fuel related LAQ emissions resulting from the proposed intrastate jet fuel obligation. In addition, we recommend CARB review its model for jet fuel LAQ emissions as it does not appear to reflect the current scientific consensus. This analysis is so fundamental to CARB’s proposal that it deserves an accurate and more robust study of the available facts.

As described in earlier sections of this document, the proposal to remove the jet fuel exemption is unlikely to stimulate additional SAF production, with producers most likely using credits generated by other fuels to satisfy the jet fuel obligation. Further, whatever increases in SAF production occur over the forecast time period will be the result of all economic levers: federal incentives, LCFS incentives, LCFS deficit generation, and operator contributions. Attributing all SAF increase to only LCFS deficit generation is a misattribution of benefit of the proposed obligation. Therefore, claims of PM and NOx reduction from SAF use as a result of the intrastate jet fuel proposal are greatly overstated. LAQ emissions reduction will only occur when and where SAF is actually used in significant quantities.

In addition, we note that CARB’s analysis of the benefits of LAQ emissions resulting from the use of SAF is based on a single series of tests conducted by NASA in 2009 and reported on in 2011. CARB’s interpretation of the results from this test identified that “Alternative jet fuel emits 87.4% the NOx and 55% the PM2.5 that fossil jet fuel emits.” Additional research has been conducted since 2009 and the scientific consensus differs significantly from what CARB has modeled. The Airport Cooperative Research Program analyzed the body of research available in 2018 and concluded that SAF minimally reduces or has no effect on NOx. The body of research and summary analysis does verify that potential reductions in SOx and PM emissions are significant, similar to CARB’s assumptions, and generally proportional to the SAF blend percentage as combusted in the engine.<sup>20</sup> We recommend CARB review its Methodology for Estimating Changes in Criteria Pollutant Emissions from Use of Alternative Jet Fuel for AJF emissions and update to current scientific consensus.”

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<sup>20</sup> See <https://nap.nationalacademies.org/download/25095>  
[https://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_wod\\_41Factsheet.pdf](https://onlinepubs.trb.org/onlinepubs/acrp/acrp_wod_41Factsheet.pdf).

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to the Recirculated EIA.

**Comment Letter 313**

2/20/2024

Amelia Keyes  
Communities for a Better Environment

**313-1:** The commenter states, “THE DRAFT ENVIRONMENTAL IMPACT ANALYSIS DOES NOT SATISFY CEQA REQUIREMENTS.

CARB has been authorized to implement its own certified regulatory program under the California Environmental Quality Act (“CEQA”), and failure to comply with that regulatory program violates CEQA. The Draft Environmental Impact Analysis (“EIA”) for the proposal violates CEQA in several respects. First, the set of alternatives CARB chose is not sufficient to evaluate feasible alternatives that could lessen significant environmental impacts. Specifically, CARB should include alternatives that involve a cap on biofuels. Second, CARB concludes that impacts on air quality are unavoidable without considering feasible mitigation options that are within its authority. Third, CARB’s conclusion that odor impacts are less-than-significant overlooks relevant information. Finally, CARB’s suggestion that land use and permitting authorities can adequately mitigate the indirect land use impacts of biofuel feedstocks is not consistent with the experience at existing biofuel refineries, and its conclusion flatly contradicts both records evidence and reality.”

**Response:** This comment is an introductory remark and provides a summary of comments. Responses to specific issues are addressed in the responses below, as appropriate.

**313-2:** The commenter states, “The EIA should include alternative scenarios that cap credits for crop-based biofuels.

CARB’s certified regulatory program requires CARB to produce a staff report that analyzes whether any feasible alternatives are available that would substantially lessen any significant environmental impacts.<sup>69</sup> The alternatives “should focus on reducing or avoiding significant environmental impacts associated with the project as proposed.”

The alternatives that CARB identifies in the Draft EIA are not effective in helping to evaluate feasible alternatives that could substantially lessen the proposal’s significant environmental impacts. Many of the proposal’s significant environmental impacts stem from the high supply of credits for combustion fuels including biofuels and biomethane. But the alternatives included in the Draft EIA (specifically Alternatives 1, 3, and 4) primarily modify the stringency of the carbon intensity targets and provide only minor variations in the supply of different types of credits. These alternatives cannot be expected to significantly change the environmental impacts identified in the proposal.

An adequate alternatives analysis must include alternatives that cap crop-based biofuels. There are several reasons why the lack of an alternative with a biofuels cap in the Draft EIA prevents CARB and the public from fully evaluating the range of regulatory options and their environmental impacts.

First, CARB is clearly considering a regulatory option that includes a cap on biofuels. “Alternative 1” in the ISOR’s “Evaluation of Regulatory Alternatives” is a scenario with lower carbon intensity stringency and a cap on virgin crop-based biofuels. However, the EIA does not include a comparable scenario. Including a biofuels cap scenario in the EIA would enable consideration of a variety of environmental resource impacts that are not studied in the ISOR. By excluding a biofuels cap scenario from its CEQA analysis, CARB fails to evaluate an alternative that it has already demonstrated is feasible and under consideration in the ISOR.

Second, the analysis of “Alternative 1” in the ISOR does not satisfy CARB’s CEQA requirements. The ISOR’s analysis of regulatory alternatives allows CARB to compare scenarios across specific factors including costs, overall climate benefits, and overall air quality benefits. The Draft EIA’s analysis of feasible alternatives considers a broader range of significant environmental impacts from the proposal. For example, the Draft EIA determines that the proposal will have a significant impact on land use related to feedstock production; agricultural and forest resources due to feedstock cultivation; and biological and cultural resources, in part due to increased use of biofuel feedstocks. Analyzing a biofuel cap alternative in the EIA would enable CARB to evaluate whether a reduced supply of biofuel credits could reduce the significant impacts identified in the proposal.

Third, CARB omitted a biofuel cap from the “Focused Crediting Scenario,” and provides no reason for leaving out this component of the Comprehensive EJ Scenario requested by the EJAC and a variety of stakeholders. CARB previously committed to evaluating the Comprehensive EJ Scenario, which includes a cap on crop-based biofuels, a rapid phaseout of avoided methane crediting, and other environmental justice priorities. It is unclear why the version of this scenario evaluated in the Draft EIA leaves out a biofuel cap. In its current form, the “Focused Crediting Scenario” is unresponsive to the EJAC’s request.

CARB should therefore include a scenario comparable to “Alternative 1” in the ISOR, and it should modify the “Focused Crediting Scenario” to include a biofuel cap, making it comparable to the requested EJAC scenario.”

**Response:** Please refer to Response to Comment 1-2. Section 15126.6 (c) of the CEQA Guidelines addresses the selection of a range of reasonable alternatives. The range of potential alternatives to a proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. As discussed on page 91 of the Initial Statement of Reasons (ISOR), Alternative 1 from the ISOR would have resulted in increased quantities of fossil fuels and negatively impacted air quality by increasing NOx and PM2.5 emissions as compared to the Proposed Scenario. Since Alternative 1 from the ISOR would cause impacts, rather than lessen or avoid significant impacts compared to the Proposed Project, and not meet the primary objectives to reduce dependence on petroleum fuels, it was not considered as a



reasonable alternative in the EIA for this rulemaking. This is also why the Focused Crediting Scenario in the Draft EIA did not include a hard cap on biofuels.

**313-3:** The commenter states, “CARB has feasible options, within its authority, to mitigate significant air quality impacts.

CEQA requires CARB to identify feasible mitigation measures that would “substantially lessen the significant environmental effects” of the proposal. “Feasible” mitigation means measures “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.” Contrary to what the Draft EIA concludes, CARB has feasible options to mitigate the air quality impacts of the proposal.

The Draft EIA correctly concludes that Short-Term Construction-Related and Long-Term Operational-Related Impacts on Air Quality are significant, although it does not thoroughly discuss the potential causes of local emissions increases. CARB estimates that “localized increases in emissions” could occur near biofuel production facilities, routes for biofuel feedstock, and routes for finished fuel transportation. CARB should also consider potential local increases in emissions around facilities that produce fossil-based hydrogen matched with biomethane credits (for example, at the Shell Energy natural gas-based hydrogen facilities in Carson and Wilmington).

The Draft EIA’s conclusion that air quality impacts are unavoidable is not correct. CARB argues that there are no feasible mitigation options because CARB does not have authority to require implementation of mitigation for projects that are under control of local and state land use and permitting authorities. However, there are many feasible mitigation options that are squarely within CARB’s authority.

First, CARB can require, as a condition for earning LCFS credits, that trucks carrying feedstocks and finished fuels to and from biofuel, hydrogen, and biomethane facilities are zero-emissions vehicles. CARB has authority to place conditions on pathway holders (for example, the proposal would impose sustainability certification conditions on pathway holders for crop-based biofuels). CARB also has authority, which it deploys in the Advanced Clean Fleets Rule, to require fleets to phase in zero-emission vehicles. And thanks in part to CARB’s groundbreaking vehicle emissions regulations, the use of zero-emission trucks is a feasible technology option to use for mitigation.

Second, CARB can prohibit or invalidate approval of pathways at facilities that are out of compliance with state and federal air quality regulations. This is a common-sense, necessary measure to ensure that the LCFS does not continue incentivizing unlawful releases of air pollution. For example, in 2021 CARB approved three pathways for Phillips 66 Rodeo to produce renewable diesel, despite receiving notice via the pathway application comments that the facility was under investigation by the Bay Area Air Quality Management District for operating an unpermitted renewable diesel hydro processing unit. CARB has clear authority to prevent these situations, as CARB’s Executive Officer can “restrict, suspend, or invalidate

credits” that are “generated... in violation of other laws, statutes, or regulations.” This option is also plainly feasible, because it merely requires compliance with existing air quality regulations.

Third, CARB can prohibit approval of pathways that produce significant air pollution in areas out of attainment with air quality standards, and/or in environmental justice communities. This would be highly effective in mitigating localized air pollution impacts, and it fits squarely within CARB’s authority to decide which fuel pathways are eligible to receive credits under the program.

These are just three examples of feasible mitigation options that CARB should consider before concluding that air quality impacts are unavoidable.”

**Response:** Please refer to Master Response 4 and Response to Comments 299-16 regarding mitigation measure requirements.

The policy proposals the comment identifies as mitigation measures involve changes to the Proposed Amendments themselves. For mitigation measures to be implementable under CEQA, they must be feasible. “Feasibility’ under CEQA encompasses a range of considerations, including ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.” (*California Natural Gas Vehicle Coalition v. State Air Resources Board* (2024) 105 Cal.App.5th 304, citing *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17.) Courts have recognized that policy considerations are relevant to the feasibility analysis, and that disagreements over legitimate policy determinations are not a basis for setting aside an EIR’s determinations. (*Id.* at 20; *San Diego Citizen Group*, *supra*, at 17.) CEQA does not require the discussion and incorporation of mitigation measures that would defeat the policy objectives identified in the CEQA document. (*California Natural Gas Vehicle Coalition v. State Air Resources Board* (2024) 105 Cal.App.5th 304.)

Limiting LCFS credit generation to facilities employing only zero-emission vehicle trucks to carry feedstocks and finished fuels to and from biofuel, hydrogen, and biomethane facilities would be infeasible, as it would likely be cost prohibitive for fleets and prevent CARB from meeting its project objectives, because zero-emission trucks may not be widely, readily available for all facilities. Commenter’s second proposed mitigation measure is also infeasible. Section 95495 of the LCFS regulation (title 17, CCR) lists “Credits or deficits were generated or transferred in violation of ... other laws, statutes or regulations” among specified bases for potential administrative invalidation or other adjustment of credits or fuel pathways. Including a mitigation measure to invalidate pathways generating credits as a result of violating the law would be duplicative of existing authorities.

Commenter’s third mitigation measure is also infeasible as stationary sources of significant air pollution in areas out of attainment would be subject to local air district authority for permitting. As provided in the Recirculated EIA, emissions from stationary sources would be monitored and controlled by local air districts to minimize the negative impacts from the increased

production. Under State Implementation Plans (SIPs), states are required to provide comprehensive plans to attain the NAAQS set by the U.S. EPA. CARB reviews and approves local area districts and other agencies' SIP elements and ensures they achieve the State's criteria pollution targets. Additionally, AB 617 directs CARB to cooperate with local air districts to implement criteria pollutant reduction programs in high-exposure communities. AB 617 additionally requires CARB to establish and maintain a database of the best-available retrofit control technology for criteria pollutants. The programs, standards, and plans specified under the SIPs and AB 617 will most likely ensure that any increase in criteria pollutant emissions from increased activity due to the Proposed Amendments will be controlled to minimize the impacts on California residents, especially in areas with poor air quality.

In regards to environmental justice communities located near livestock facilities, please refer to response to comment 299-16. Local and state laws exist to prevent and otherwise address those potential adverse impacts through the administration of agencies with authority to enforce those laws.

The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment's potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**313-4:** The commenter states, "The Draft EIA's finding that long-term operational impacts from odors are less than significant is likely incorrect because it overlooks odor impacts at biofuel refineries. In both the Phillips 66 Rodeo and Marathon Martinez refinery conversions, the Environmental Impact Reports for both conversion projects found that odor impacts could be significant without mitigation measures. Although the elimination of petroleum refining has beneficial impacts on refinery odors, the use of animal-based feedstocks can create odors similar to those from animal and food processing facilities. The risks of these odor impacts led Contra Costa County to require odor mitigation measures at both biofuel refineries. Given these findings of significant odor impacts from specific biofuel refinery facilities, CARB should reconsider its finding of less-than-significant odor impacts."

**Response:** Please refer to pages 55-57 of the Recirculated EIA for a discussion related to odors. Implementation of the Proposed Amendments would encourage the collection of natural gas from dairies, landfills, and wastewater treatment plants. Generally, odor is considered a perceived nuisance and an environmental impact. Factors that would affect odor impacts include the design of collection facilities and exposure duration. In general, odors associated with dairies, landfills, and wastewater treatment plants are part of the existing conditions baseline and are likely to be reduced using a closed system (e.g., digester facilities). In addition, odor impacts are site-specific, and the gaseous compounds released during

operations would be distributed into the atmosphere in a way that would not allow for combined effects.

Please also refer to Master Response 1.

**313-5:** The commenter states, “CARB’s conclusion that significant land use impacts from biofuels are “unavoidable” leaves no real opportunities for mitigation.

The Draft EIA finds that biofuels cause numerous significant environmental impacts related to indirect land use change, but it does not acknowledge that there are few realistic ways to ensure that those impacts are analyzed and mitigated. Increased demand for biofuel feedstocks can lead to indirect land use changes by diverting food crops to produce biofuels. This has significant global impacts on agriculture and forest resources, biological resources, cultural resources, and geology and soils. For each of these resource areas, CARB concludes that significant impacts are unavoidable because CARB does not have authority to require mitigation that would be implemented by local authorities, and CARB provides a list of “recognized practices” that are “routinely required” by other authorities that are likely to minimize such impacts.

In practice, communities are left in a catch-22 in which no state or local authority in California will evaluate the indirect land use impacts of biofuel feedstocks and consider mitigation options. The Phillips 66 Rodeo biofuel refinery provides an instructive example of this problem. During CEQA review of the refinery conversion, communities asked Contra Costa County to analyze the project’s indirect land use change effects, but the County refused to conduct this analysis on the grounds that these effects were too speculative because the specific mix of feedstocks used at the refinery could not be predicted. The Contra Costa County Superior Court agreed, holding that the mix of feedstocks used at the facility could not be accurately predicted to support an indirect land use change analysis. The local permitting process thus provided no opportunity to evaluate indirect land use change effects and consider mitigation options, despite the fact that throughout this CEQA process, Phillips 66 was already receiving credits from CARB for fuel pathways based on specific feedstocks.

This experience shows that although fuel producers are able to provide CARB with sufficient information about their feedstocks to enable analysis of land use change effects, this information is unlikely to be used in CEQA analyses for biofuel projects. This casts doubt on CARB’s conclusion that land use change impacts could be reduced to less-than-significant levels with mitigation from land use agencies and permitting agencies. It also exposes the lack of realistic options for evaluating and addressing the proposal’s land use change impacts.”

**Response:** Please refer to Master Response 2.

**Comment Letter 317**

2/20/2024

Ellison Folk  
Leadership Counsel for Justice and Accountability

This comment letter is a duplicative submittal. Please refer to responses to Comment Letter 299 above.

**Comment Letter 322**

2/20/2024

Anna Redmond; Stefan Unnasch  
Life Cycle Associates LLC

**322-1:** The commenter states, "It's worth noting that while methane holds about 30 times the potency of CO<sub>2</sub> over a century, N<sub>2</sub>O is roughly 300 times more potent than CO<sub>2</sub> over the same period. Unlike methane, which dissipates relatively quickly, N<sub>2</sub>O persists in the atmosphere for over a century, amplifying its long-term warming impact."

**Response:** This comment provides a summary of the potency of greenhouse gases. The comment does not raise issues related to the adequacy of the environmental analysis, and no edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 324**

2/20/2024

Rock Zierman  
California Independent Petroleum Association

**324-1:** The commenter states, “The OPGEE model overestimates the CI of California crude oil, and underestimates the CI of foreign crudes, most notably those from Saudi Arabia and Ecuador, the two largest suppliers of oil to California. The data support the common-sense conclusion that California’s demand for oil is best met by locally produced, locally regulated, and lesser greenhouse gas emitting oil than those foreign sources which require long transport distances in addition to non- or under-reported greenhouse gas emissions and environmental protections.”

**Response:** The comment provides an opinion about the OPGEE model estimates of the carbon intensity of crude oil in California and foreign countries. It does not raise issues related to the adequacy of the environmental analysis, and no edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 340**

2/20/2024

Jamie Katz  
Central Valley Defenders for Clean Air and Water

**340-1:** The commenter states, “The smell of ammonia and concentrated cow manure has only gotten worse in Pixley. We are surrounded by dairies and their digesters, the truck traffic in our community keeps getting worse, and people in our community are suffering from the air quality impacts.”

**Response** Please refer to Response to Comment 313-4.

Please refer to page 164 of the Draft EIA for a discussion related to traffic. Given the conclusion in Chapter 4.0 that the proposed amendments may themselves result in a significant adverse impact to transportation and traffic, implementation of mitigation measures would reduce these environmental effects. However, because the authority to determine activity-level impacts and require activity-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EIA does not attempt to address site-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

**340-2:** The commenter states, “You are contaminating our air, water, and all for companies that are not even in our communities.”

**Response:** Please refer to Master Response 4.

**340-3:** The commenter states, “CARB must regulate the dairy industry. We have to endure the flies, the odors, and the air quality impacts. Many people in my community live with Asthma. The dairy industry impacts our air and water quality. I worry about our safety and our health. CARB must have regulations on the dairies manure.”

**Response:** Please refer to Master Responses 1 and 4.



**Comment Letter 348**

2/20/2024

Patty Lovera  
Campaign for Family Farms and the Environment

**348-1:** The commenter states, “The LCFS has become a lucrative financing tool for factory farm biogas. It is driving the construction of more factory farms and factory farm biogas projects in states far from California, causing severe harm to air, water, public health, rural economies, and overall quality of life.”

**Response:** Please refer to Master Responses 1 and 4 and the Recirculated EIA.

**348-2:** The commenter states, “Factory farms require huge quantities of feed, water, chemical inputs and energy and manage manure in a way that drives greenhouse gas emissions.”

**Response:** Please refer to Master Response 1 and the Recirculated EIA.

**348-3:** The commenter states, “The California Air Resources Board (CARB) has the opportunity to adopt new rules that would realign the LCFS with California’s environmental justice commitments and stop rewarding factory farms around the country for their pollution.”

**Response:** Please refer to Master Response 1 and the Recirculated EIA.

**Comment Letter 349**

2/20/2024

Gary Hughes  
Biofuelwatch

**349-1:** The commenter states, “It is obvious to anyone with experience in the manufacture of liquid biofuels that these energy products present serious threats to forest ecosystems and the communities dependent on them. It has long been understood that any increase in demand for high deforestation risk commodities for use in feed, food, or for fuel will drive deforestation. This most certainly includes liquid biofuels.”

**Response:** Please refer to Master Response 2.

**349-2:** The commenter states, “This is not the only effort of CARB staff to try to assuage the concerns about the well-known fact that increasing demand for high deforestation risk feedstocks such as soy to make liquid biofuels is a driver of land use change, biodiversity loss and environmental degradation. The Purpose and Rationale goes on to explain that “(T)he growing demand for crop- and forest-based feedstocks for use in the LCFS program produce an increasing risk of deforestation and use of land with a high biodiversity value to meet this demand. It is vital that the LCFS program limit deforestation and land use change as a result of feedstock production as much as possible.”

**Response:** Please refer to Master Response 2.

**349-3:** The commenter states, “Our organization noted that CARB has finally taken steps to more explicitly prohibit the use of palm oil or palm derivative fuels in the LCFS program. However, we still take issue with the assignment of higher Carbon Intensity (CI) scores as a disincentive. First and foremost, the reliance of the LCFS on CI is essentially a case study in the manner in which CARB obfuscates climate science, as the concept of CI ignores the climate science fundamental that emissions are cumulative. Just like with cap-and-trade CARB embarks upon technocratic carbon accounting formulas that fail to take into account the most basic underpinnings of the climate problem: that emissions are cumulative and that we are working with a rapidly diminishing carbon budget. The LCFS still fails to pass the climate science smell test.”

**Response:** Please refer to Master Response 2.

**349-4:** The commenter states, “Much more research and analysis need to be done about the viability and environmental repercussions of granting a special climate value to making liquid biofuels from soy. The available evidence shows that this is not a climate solution. By rushing forward with these credit pathways for making liquid biofuels from commodities like soy CARB is running the risk of elevating California climate policy to become a driver of global deforestation.”

**Response:** Please refer to Master Response 2.

**349-5:** The commenter states, “an industrial model that is poisoning their families and their environment. This public health crisis is totally ignored by the LCFS and the formulas used to give a CI value to different feedstocks. The LCFS design discriminates against affected communities; in the rush to put a price on carbon and to protect the stranded assets of multi-billion-dollar transnational energy corporations, California is embracing known false solutions like liquid biofuels. The externalities of these resource intensive high emissions feedstocks are thrust on rural and indigenous communities, which are forced to shoulder the burden of a climate mechanism that fails to take their well-being into account.”

**Response:** Environmental justice is not an issue required to be analyzed in the EIA under CEQA. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 368**

2/20/2024

Allie Wainer  
Center for a Liveable Future

**368-1:** The commenter states, “We are concerned that the avoided methane credits incentivize wet manure management systems, which pose known public health concerns. These systems use pits or tanks to store liquid waste and a connected system of pipes to transport it. The tanks and pipes are both susceptible to failures and breaches—now more common as heavy rainfall and flooding become more frequent and intense due to climate change. These failures and breaches may release pathogens, nitrates, and other pollutants into surface water and groundwater supplies (Burkholder et al. 2007). Exposure to these contaminants have been linked to an increased risk of cancer, diabetes, thyroid disease, and birth defects (Burkholder et al. 2007; Jones et al. 2016; Inoue-Choi et al. 2015; Temkin et al. 2019). Furthermore, wet manure management systems are associated with high levels of nitrous oxide and methane emissions, which contribute to climate change and are associated with increased asthma attacks (Glibert 2020).

Due to the water contamination and air pollution caused by wet manure management systems, the American Public Health Association (APHA) has called on federal and state governments to “prohibit the installation of new liquid manure handling systems, including waste lagoons” and to phase out existing wet manure management at IFAP facilities (APHA 2019). Unfortunately, the Proposed LCFS Amendments, through avoided methane crediting and the resulting negative carbon intensity for biogas, would do the opposite.”

**Response:** Please refer to Master Response 1 and 4.

**368-2:** The commenter states, “In conclusion, the California Air and Resources Board must eliminate avoided methane crediting, included in the Environmental Justice Scenario, in order to mitigate the public health risks described above. CARB has stated its commitment to transition to clean fuels and to improve air quality in the transportation sector in California. We believe that a solution to improved air quality in the transportation sector cannot include regulations that harm air quality in the agricultural sector. Given that CARB does not have the authority to implement air quality mitigation measures, it should be particularly cautious about including any measures in the LCFS that pose a public health risk to air quality.”

**Response:** Please refer to Master Response 1 and 4.

**Comment Letter 373**

2/20/2024

Kyle Berquist  
Earthjustice

**373-1:** The commenter states, “The world has changed a lot since the implementation of the LCFS in 2009. Unlike the 2000s, we have a north star goal for our climate and the air we breathe: zero emissions transportation. Continuing to invest the billions in revenue from the LCFS into harmful and polluting biofuels that end up combusted, instead of electric vehicles powered by clean energy, hampers our efforts to fight the climate crisis while enriching oil companies and industrial agriculture.”

**Response:** As described on Page 5 of the Draft EIA, California’s 2022 Climate Change Scoping Plan to Achieve Carbon Neutrality (2022 Scoping Plan Update), adopted in December 2022 by CARB, provides the framework for the state to achieve this target through the continuation of existing measures implemented under SB 32 and through the development of new strategies. The 2022 Scoping Plan Update identifies developing more stringent LCFS targets as one of the primary measures for achieving the State’s GHG 2045 target of carbon neutrality. To meet those goals, CARB staff developed the Proposed Amendments to improve California’s long-term ability to support the consumption of increasingly lower-CI fuels, including electricity and hydrogen for use in zero emission vehicles, and improve the LCFS program’s overall effectiveness.

## Comment Letter 375

2/20/2024

Michael Wara  
Stanford University

**375-1:** The commenter states, “We recommend that ARB reevaluate GHG emission reductions and adopt a cap on lipid biofuels at a level that is consistent with the assumptions underlying its current ILUC estimate.”

**Response:** Please refer to the Recirculated EIA and Master Response 2.

**375-2:** The commenter states, “Further, there is another issue that may cause the increased stringency of the amended LCFS program to contribute to a net increase in emissions. Because the cap-and-trade program does not evaluate all upstream emissions associated with biofuel production (such as agriculture emissions from feedstock production or biorefining outside of California), to the extent that the LCFS increases production of biofuels, it will also increase emissions outside of the cap-and-trade program. At the same time, any emissions reductions from gasoline and diesel fuels in California achieved by the LCFS may be offset by increases in other sectors based on the waterbed effect (see above). We recommend that ARB staff reevaluate the estimated GHG emission reductions of the proposed amendments to the LCFS, taking into account the potential for leakage effects.”

**Response:** Please refer to Master Response 4 and 5 and the Recirculated EIA for an updated GHG analysis of the Proposed Amendments..

**375-3:** The commenter states, “ARB’s assessment of the GHG emissions impacts of the rule are almost certainly overstated and need to be reevaluated.

We perceive several issues with ARB’s calculation of GHG emission reduction benefits of the proposed LCFS amendments against which costs must be judged. Quantification of GHG emission benefits is especially important for the LCFS since that is the basic justification for the policy’s existence.

Below, we discuss two issues that merit substantial reanalysis or correction in the GHG emission benefits:

(1) Transparency regarding the interaction of the LCFS proposed amendments with the federal Renewable Fuels Standard (RFS);

(2) the implications of the massive growth in RD supply for indirect land use change (ILUC) emissions.

(a) Contrary to ARB’s prior practice, the ISOR is unclear on how the RFS is accounted for and appears to claim credit for emission reductions caused by the RFS. It also does not account for resource shuffling caused by the RFS and LCFS interaction. ARB should be transparent about

how it accounts for this interaction if in fact that has changed since the 2018 LCFS amendments.”

**Response:** Please refer to Master Response 5 and the Recirculated EIA for an updated GHG analysis of the Proposed Amendments.

**Comment Letter 376**

2/20/2024

Robert Parkhurst

**376-1:** The commenter states, “We are asking the Board to direct staff to investigate how the agriculture sector can be optimized to produce low-carbon biofuels to meet the state’s SAF goal. Specifically, we are requesting the Board to prioritize policy discussions and the associated technical analysis related to low-carbon feedstocks for the production of SAF. This technical analysis should include a thorough lifecycle analysis to determine the extent to which supplies of sustainable biofuels produced from various feedstocks can be expanded while not converting additional land to agricultural uses. This technical analysis should be informed by the other primary LCA methodologies including Argonne GREET. To ensure the timely analysis of this information, we request that the Board direct staff to report back to the Board by the end of 2025 on the results of lifecycle analysis and progress toward developing policies to encourage the production of SAF.”

**Response:** In the first 15-day change to the Proposed Amendments, staff proposed to remove the previously proposed obligation for intrastate fossil jet. Please refer to Response to Comment 1-2 and Master Response 5.



**Comment Letter 377**

2/20/2024

Christine Bell-Blakely

**377-1:** The commenter states, “For more than four years, community members and organizations concerned about factory farm pollution and environmental injustice in the San Joaquin Valley—including the undersigned coalition of organizations (“Commenters”)—have raised the alarm about the consequences of the California Air Resources Board’s (“CARB”) monetization of factory farm pollution through the Low Carbon Fuel Standard (“LCFS”). Specifically, these community members and organizations have spotlighted CARB’s unlawful operation of the LCFS outside its regulatory authority—including CARB’s operation of the LCFS as a pollution trading scheme that fuels industry and investor profits while dumping the resulting pollution and related costs on rural, low-income, and/or Latino/a/e communities. CARB staff, in their proposed rule and Initial Statement of Reasons (“ISOR”), have ignored these concerns, along with the people raising them and the facts underpinning them. CARB must comply with its legal obligations and reform the LCFS.”

**Response:** Please refer to the Recirculated EIA and Master Response 1.

**377-2:** The commenter states, “Ammonia Emissions and Exposure-Ammonia is a toxic, odorous gas. Prolonged exposure to elevated ammonia levels causes respiratory issues; irritation to the throat, lungs, and eyes; and lung damage. Large livestock operations account for 57% of ammonia emissions in the San Joaquin Valley air basin. As large dairy operations continue to grow in the San Joaquin Valley, so too will ammonia emissions from those operations. Furthermore, the process of manure digestion itself changes the composition of manure such that ammonia emissions increase along with other emissions. This increase in ammonia emissions increases the risk of exposure to toxic levels of ammonia.”

**Response:** Please refer to the Recirculated EIA, Master Response 1 and 4, and Response to Comment 313-4.

**377-3:** The commenter states, “The San Joaquin Valley is classified as an area that fails to meet most federal air quality standards. According to the American Lung Association’s annual State of the Air Report, Bakersfield is the most polluted city in the country with respect to short-term exposure to PM2.5, followed by Fresno-Madera-Hanford, with Visalia coming in fourth. Bakersfield and Visalia are tied for the most polluted cities with respect to long term PM2.5 exposure, followed immediately by Visalia. CARB has acknowledged that PM2.5 exposure alone “is responsible for about 1,200 cases of premature death in the Valley each year.”

Exposure to PM2.5 is linked to premature deaths in people with heart or lung disease, heart attacks, irregular heartbeat, aggravated asthma, decreased lung function and long-term lung conditions including cancer.

As noted above, increased numbers and concentration of cows will increase ammonia emissions. Similarly, it will increase NOx emissions. Additionally, increased installation and

operation of digesters will intensify and increase NO<sub>x</sub> in the San Joaquin Valley. Digesters that utilize internal combustion engines – either to generate electricity or to power electrolysis – emit large amounts of NO<sub>x</sub>. Additionally, flaring of biogas creates significant NO<sub>x</sub> emissions.

Thus, an increase in the size and concentration of dairy cows, along with the increased emissions from digesters and digested manure will contribute to increased PM 2.5 concentrations in the San Joaquin Valley.”

**Response:** Please refer to Master Responses 1 and 4 and the Recirculated EIA.

**377-4:** The commenter states, “Dairies are the largest source of volatile organic compounds in the San Joaquin Valley and combine with NO<sub>x</sub> to make ozone. The San Joaquin Valley also violates health-based standards for ozone.”

**Response:** Please refer to Master Responses 1 and 4, and the Recirculated EIA.

**377-5:** The commenter states, “Large scale dairy operations in the San Joaquin Valley contribute to nitrate groundwater pollution. As more cows are concentrated on large dairies in the San Joaquin Valley, the problem will only intensify. Digesters do not solve this problem. Ninety-four percent of nitrate pollution is the result of application of manure to cropland, a practice that continues whether the manure is or is not digested. Therefore, the installation of a digester, even if the anaerobic manure cesspool is lined, does not address the nitrate contamination of groundwater. In fact, rather than mitigate nitrate contamination, the changed chemical composition of digestate post-digestion exacerbates nitrate leaching to groundwater, thus increasing the likely incidence and intensity of groundwater and drinking water pollution in communities near operations that use digesters and apply manure to fields.

Nitrate contamination in drinking water is associated with dangerous human health conditions like colorectal cancer, thyroid disease, birth defects, and premature births. Nitrates in drinking water may be best known for interfering with red blood cells’ ability to carry oxygen. This can cause methemoglobinemia, a serious condition in infants (known as “blue baby syndrome”) that can be fatal. California agencies are well aware of the public health risks posed by nitrates in drinking water.”

**Response:** Please refer to Master Response 4 and the Recirculated EIA.

**377-6:** The commenter states, “Nitrate contamination disproportionately impacts small, rural, disadvantaged communities of color. Rural, disadvantaged communities also tend to be very low-income and pay on average three times the cost for water considered affordable by the U.S. Environmental Protection Agency. Additionally, communities and households reliant on domestic wells, and therefore especially vulnerable to nitrate pollution, are disproportionately Latino/a/e.

Thus, increased concentration of cows, increased herd sizes, and increased use of digesters will exacerbate nitrate contamination in the San Joaquin Valley and will harm lower income communities of color in particular.”

**Response:** Please refer to Master Response 1 and the Recirculated EIA. Environmental justice is not an issue required to be analyzed in the EIA under CEQA.

**377-7:** The commenter states, “Industrial dairies use massive amounts of water including groundwater in the extremely fragile San Joaquin Valley ecosystem. In addition to supplying large amounts of drinking water to cows, dairies need large amounts of water for liquefying and flushing manure and other pollutants for storage in lagoons, cooling animals, cleaning facilities, and irrigating crops. In addition, dairies rely upon water-intensive crops to feed dairy cows such as alfalfa. California’s large dairies use an estimated 142 million gallons per day, or almost 52 billion gallons per year.”

**Response:** Please refer to Master Responses 1 and 4, and Response to Comment 299-4. . As part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid off-site groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

**377-8:** The commenter states, “Commenters are not aware of a study conducted to analyze the nuisance or health impacts of odor or flies near factory farm dairies. However, residents who live near factory farm dairies consistently report intense odors from the dairies. They report that they cannot enjoy time outdoor and even that these odors follow them indoors, permeating their clothes, and causing headaches. Residents also report a high incidence of flies around their communities and their homes. They report that they do not experience an improvement in either with the installation of a digester. Common sense dictates that more cows, more cows concentrated on large farming operations near communities will only exacerbate the impacts of odor and flies on San Joaquin Valley residents.”

**Response:** Please refer to Master Response 1, Response to Comment 313-4 and the Recirculated EIA.

**377-9:** The commenter states, “CARB’s treatment of factory farm gas under the LCFS has the perverse effect of incentivizing larger, more concentrated herds and methane producing manure management systems, the two most important factors that increase a dairy’s climate emissions.”

**Response:** The comment indicates that the LCFS incentivizes larger, more concentrated herds, and methane producing manure management systems, but does not provide evidence to support the claim. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. Please refer to Master Response 1 and the Recirculated EIA. No further response is required.

**377-10:** The commenter states, “The Petition for Rulemaking set forth three main reasons why CARB was—and continues to be—legally required to grant this relief. First, factory farm gas pathways fail to achieve the maximum technologically feasible and cost-effective emissions reductions, as Assembly Bill 32 (AB 32) requires, because they fail to incorporate proper lifecycle analyses (LCAs), leading to indefensibly low carbon intensity scores and, in turn, an indefensibly high number of credits generated for factory farm gas production.”

**Response:** Please refer to Master Response 1 and the Recirculated EIA.

**377-11:** The commenter states, “Second, the LCFS fails to ensure that credited emission reductions are additional to reductions that would have otherwise occurred as required by section 38562(d)(2) of the Health & Safety Code. This dynamic has increased—and continues to increase—manure production and industry consolidation and expansion, exacerbating localized pollution and disparate impacts to communities. Thus, CARB has failed—and continues to fail—to achieve the maximum technologically feasible and cost-effective greenhouse gas (GHG) emissions. Third, factory farm gas pathways fail to maximize additional environmental benefits and interfere with efforts to improve air quality.”

**Response:** Please refer to Response to Comment 1-2 and Master Responses 1, 4 and 5.

**377-12:** The commenter states, “Petitioners also asked CARB to evaluate and amend the LCFS to remedy its disproportionate adverse and cumulative impacts on low-income and Latino/a/e communities in violation of state and federal law. The Petition for Rulemaking provides three main reasons why CARB was—and continues to be—legally required to grant this relief. First, LCFS credits and the subsequent trading of those credits incentivize activities that result in public health and environmental harms in disproportionately low-income and Latino/a/e communities, particularly in the San Joaquin Valley. Second, CARB is required to ensure that the LCFS complies with CA 11135, CA 12955, and Title VI of the Civil Rights Act of 1964 to prevent discrimination. Third, CARB failed to design the LCFS in a manner that is equitable, and CARB fails on an ongoing basis to consider the social costs of GHG emissions and to ensure that the LCFS does not disproportionately impact low-income communities.”

**Response:** The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this

comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**377-13:** The commenter states, “The Environmental Justice Advisory Committee (EJAC) submitted recommendations to CARB regarding the Scoping Plan, and some of those recommendations specifically concern factory farm gas in the LCFS. For example, EJAC recommended that CARB ‘[e]valuate whether to remove livestock and dairy gas from the LCFS based on the role of the LCFS in incentivizing herd concentration near pollution-burdened communities and in pollution-burdened regions, accurate GHG emissions analyses, and conformity with additionality requirements.’ EJAC further recommended that CARB ‘[r]eevaluate the carbon intensity value of livestock and dairy gas based on a full life cycle analysis, an analysis of additionality for each project, and relevant regulatory programs.’”

**Response:** The comment provides a summary of EJAC’s recommendations to CARB regarding the Scoping Plan. Alternative 2 discussed in the Draft EIA is a version of the “Comprehensive EJ Scenario” recommendations made by CARB’s EJAC. Please refer to the Draft EIA pages 175 through 177 for a discussion of Alternative 2.

**377-14:** The commenter states, “In those comments, Commenters raised concerns about the consequences of the LCFS’s monetization of manure, including environmental injustice, environmental degradation, lack of additionality, and inadequate LCA. As many of these pathway applications illustrate, the LCFS is a moneymaker for some of the largest factory farms in California and beyond, often in regions already overburdened with agricultural pollutants. CARB has the certified Tier 2 applications over Commenters’ objections.”

**Response:** Please refer to Master Response 1 regarding impacts related to factory farms and the Recirculated EIA regarding life cycle assessment. Environmental justice is not an issue required to be analyzed in the EIA under CEQA. Alternative 2 of the Draft EIA considers the “Comprehensive EJ Scenario” based on recommendations provided by CARB’s EJAC.

The rest of the comment states that the LCFS is a money maker for some of the largest factory farms but does not provide evidence to support the claim. No further response is required.

**377-15:** The commenter states, “CARB must account for the true carbon intensity of factory farm gas. The proposed rulemaking package dramatically miscalculates the carbon intensity (“CI”) of factory farm gas, resulting in extremely negative CI values that bear little relationship to the real-world climate footprint of these fuels. CARB has certified some factory farm gas projects with CIs lower than -750 gCO<sub>2</sub>eq/MJ. This flawed accounting distorts the LCFS and causes severe consequences for human health, the state’s clean transportation goals, and agriculture. The extremely negative CIs for factory farm gas fuels are based on avoided methane crediting and an artificially truncated lifecycle analysis (“LCA”). To remedy these problems, CARB must eliminate avoided methane crediting in this rulemaking and revise the LCA parameters in the proposed simplified Tier 1 calculators and CA-GREET4.0.

As discussed above, Commenters first brought these issues to CARB's attention in 2021. But despite growing concern from environmental justice advocates, clean transportation advocates, scientists, academics, and CARB Board Members over the ensuing years, the proposed rulemaking would lock these erroneous and misleading CI calculations into the LCFS. In fact, staff intends this rulemaking to supercharge the number of factory farm gas fuel producers that will benefit from this faulty accounting for years to come. Were CARB to adopt staff's proposal it would do so counter to science and common sense and would make the perverse incentives that currently plague the LCFS even worse."

**Response:** Please refer to Master Responses 1 and 5.

**377-16:** The commenter states, "Avoided methane crediting is based on faulty assumptions and exacerbates GHG emissions."

**Response:** Please refer to Master Response 1.

**377-17:** The commenter states, "Avoided methane crediting relies on the assumption of perpetual free venting of methane manure from the most polluting factory farm practices. This assumption is arbitrary because CARB is legally obligated to consider and have a preference for direct, regulatory reductions in manure methane emissions.<sup>21</sup> As explained blow, CARB cannot use the LCFS in place of absolute, direct reductions under SB 1383; it likewise cannot set a baseline for determining factory farm gas fuels' CI under the LCFS that pretends SB 1383 does not exist."

**Response:** Please refer to Master Response 1. The comment does not address the adequacy of the EIA and no further response is required.

**377-18:** The commenter states, "CARB cannot ignore that avoided methane crediting causes factory farms to expand and structure their operations in ways that maximize methane pollution. This is a critical flaw in CARB's treatment of factory farm gas because intentionally produced methane emissions are always climate intensive."

**Response:** Please refer to Master Response 1.

**377-19:** The commenter states, "CARB fails to require a full lifecycle analysis for factory farm gas fuels. CARB further distorts the CI of factory farm fuels by failing to account for significant up and downstream GHG emissions directly associated with production of the fuel. The Amendments fail to address this flawed system boundary and continue to leave out known and significant emissions. Ignoring GHG emissions directly associated with factory farm gas production arbitrarily pushes CI values for these fuels even lower and in effect infuses the LCFS with bogus credits that do not represent real emissions reductions."

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<sup>21</sup> SB 1383; AB 197.

Both up and downstream GHG emissions must be added to the LCA for factory farm gas fuels. Emissions from factory farm operations upstream of liquid manure collection must be included in the LCA because the LCFS regulations define a “fuel pathway” to include “a complete well-to-wheel analysis.” And when a project applies for an LCFS Tier 2 pathway, the application’s life cycle analysis must take into account “feedstock production.” For factory farm gas production, “feedstock” is manure from confined animals and thus “feedstock production” must include consideration of the processes and animals that produced the methane-emitting manure. CARB may believe that upstream emissions are attributable to other products from factory farming, like milk or meat, but the “manure gold rush” now in effect mandates that CARB treat liquified manure emitting methane as a co-product of raising animals in these conditions, especially when the LCFS distorts agricultural markets such that herds may be larger than justified by agricultural production alone.”

**Response:** Please refer to Master Response 1 and the Recirculated EIA.

**377-20:** The commenter states, “Were these default values remotely close to real-world conditions, they would align with real-world monitoring of LCFS-supported dairy digesters. But they do not. Instead, the actual monitoring data are showing that LCFS-supported digesters are relatively ineffective at total methane capture, with one peer-reviewed study finding no statistically significant difference between methane emissions at California dairies with and without covered lagoon digesters. And an analysis of Carbon Mapper data conducted by Food & Water Watch shows that fifteen LCFS-supported dairy digesters continue to have massive methane plumes despite installation of a digester and certification to generate LCFS credits. Therefore, real-world conditions appear to disagree significantly with CARB’s assumptions regarding methane capture and loss to the atmosphere from factory farm digester operations.”

**Response:** Please refer to Master Response 1.

**377-21:** The commenter states, “the methane reductions from digesters offset fossil fuel emissions. With the LCFS transferring the alleged methane reductions from anaerobic digester-related fuel pathways to authorize more climate pollution from fossil fuels in the LCFS, CARB arbitrarily and capriciously proposes to credit the same methane reductions toward the Senate Bill 1383-required methane reductions.”

**Response:** Please refer to Master Response 1.

**377-22:** The commenter states, “The LCFS and the proposed Amendments will encourage further concentration of dairy herds, dairy cows, and wet manure in the San Joaquin Valley. In doing so, it will disproportionately impact Latino/a/e communities and people. Specifically, Latino/a/e communities and people will disproportionately suffer (a) increased discharge of nitrate to groundwater within the localized zone of contribution”

**Response:** Please refer to Master Response 1 and the Recirculated EIA. The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the

Proposed Amendment's potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**377-23:** The commenter states, "decreased groundwater levels within the localized cone of depression."

**Response:** Please refer to Master to Response 4 and Response to Comment 299-4. As part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid off-site groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

**377-24:** The commenter states, "increased air pollution, including exposure to ammonia, ozone, and pm 2.5"

**Response:** Please refer to Master Response 4.

**377-25:** The commenter states, "increasing and exacerbating impacts to odor and flies. They will also experience higher rates of the associated health impacts, as stated above."

**Response:** Please refer to Response to Comment 313-4.

**377-26:** The commenter states, "Anaerobic digesters negatively impact disproportionately Latino/a/e communities. Increased installation and operation of digesters will also worsen local air and water pollution, by increasing nitrate pollution and ammonia emissions. Additionally, flaring of excess biogas and use of combustion engines to convert biogas into electricity will increase NOx emissions in the San Joaquin Valley. Increased nitrate pollution will contaminate drinking water sources, while increased ammonia and NOx emissions will increase exposure to ammonia along with PM2.5 and ozone pollution. Digesters are almost exclusively installed at large dairies located in disproportionately Latino/a/e regions of the state. Therefore, anaerobic digesters, and incentives to build them, disproportionately impact Latino/a/e communities and people by increasing pollution and the resulting health and quality of life impacts.

**Response:** Please refer to Master Responses 1 and 4 and the Recirculated EIA. The EIA is not meant to address economic, social, or financial issues associated with the Proposed



Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment's potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**377-27:** The commenter states, "As discussed throughout these comments, the existing LCFS program results in disproportionate and negative harm on communities of color and people of color, particularly Latino/a/e people and communities. The proposed Amendments will intensify these impacts."

**Response:** Environmental justice is not an issue required to be analyzed in the EIA under CEQA. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

**377-28:** The commenter states, "As discussed above, the Amendments, if implemented, will increase groundwater pollution, groundwater depletion, ammonia emissions, odor, flies, and air pollution in communities near dairies and the San Joaquin Valley broadly. Such impacts effectively preclude the full use and enjoyment of dwellings by impacting drinking water supplies, increasing exposure to noxious and toxic emissions, and creating a nuisance. Similarly, the proposed LCFS amendments would have probable impacts on land use decisions, including livestock operation expansions and installation of digesters which in turn will increase air and water pollution along with nuisance odors and flies the San Joaquin Valley and communities near large-scale dairy livestock operations."

**Response:** Please refer to Master Responses 2, 4, and 5.

**377-29:** The commenter states, "The proposed amendments will exacerbate economic and environmental obstacles to opportunity in lower income communities and people and communities of color in the San Joaquin Valley. The proposed Amendments, if adopted and implemented, would increase exposure to ammonia in communities near large dairies, increase PM2.5 and ozone in an already compromised San Joaquin Valley, increase nitrate contamination of drinking water, increase odors inside and outside homes, and deplete groundwater in already over drafted aquifers. All of these impacts negatively impact access to opportunity in lower income communities of color in violation of CARB's duty to Affirmatively Further Fair Housing."

**Response:** Environmental justice is not an issue required to be analyzed in the EIA under CEQA. Please refer to Master Responses 4 and 5.

**Comment Letter 378**

2/20/2024

Joshua Wilson  
POET

**378-1:** The commenter states, “Specifically, by placing new and unnecessary burdens on the production of bioethanol, the proposal threatens to reduce the volume of bioethanol used in California’s transportation fuel supply or impose new costs that would be passed on to California consumers. A reduction in bioethanol blending would result in higher greenhouse gas (“GHG”), particulate matter (“PM”), and other pollutant emissions from vehicles.”

**Response:** The comment states that the Proposed Amendments threatens to reduce the volume of bioethanol used in California’s transportation fuel supply or impose new costs that would be passed on to California consumers, and states that a reduction in bioethanol blending would result in higher GHG, PM, and other pollutant emissions from vehicles. However, the comment does not provide evidence to support the claims. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

**378-2:** The commenter states, “Bioethanol offers significant air quality and GHG emissions reduction benefits compared to petroleum-based gasoline. To achieve California’s emissions reduction and air quality goals, CARB must ensure that bioethanol continues to play a central role in the LCFS program. The 2022 Scoping Plan acknowledges that liquid petroleum fuel will remain in California’s transportation fuel mix for decades because legacy internal combustion vehicles will remain on the road for years. CARB should incentivize the reduction of gasoline’s CI in this legacy fleet, and we urge CARB to look to bioethanol to achieve these reductions.”

**Response:** The comment states that bioethanol offers significant air quality and GHG emissions reduction benefits and requests CARB to ensure that bioethanol continues to play a central role in the LCFS program. The comment also suggests CARB incentivize the reduction of gasoline’s carbon intensity and look to bioethanol to achieve these reductions. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

**378-3:** The commenter states, “As explained further below, CARB’s proposal would cause adverse environmental consequences if the sustainability requirements as proposed are applied to corn. We urge CARB to reevaluate this proposal and exclude corn from any “sustainability requirements” to be imposed on crop-based feedstocks.”

**Response:** Please refer to Response to Comment 1-2.

**378-4:** The commenter states, “As discussed above and in the attached report by EH&E, lower levels of ethanol blending would like result in increased levels of PM and other pollutants. This

has been confirmed by UCR in a study funded by CARB. As a result, the proposal threatens to increase the emission of both criteria and toxic air pollutants in California.”

**Response:** Please refer to Master Response 4.

**378-5:** The commenter states, “As discussed above, ethanol reduces a number of pollutants, including PM. However, CARB’s proposal may result in CI penalties for a significant volume of imported ethanol, disincentivizing ethanol use in California fuels. Pursuant to the attached EH&E analysis, a reduction in ethanol blending would raise criteria and toxic pollutant emissions in California in a manner inconsistent with AB 32. CARB should avoid adopting a rule that would increase both GHG emissions and other pollutants in California.”

**Response:** Please refer to Response to Comment 1-2 and Master Response 4.

**378-6:** The commenter states, “CARB’s Environmental Analysis Does not Adequately Assess the GHG and Air Pollutant Impacts of its Sustainability Proposal. CEQA requires that an agency’s environmental analysis contain “[a] discussion and consideration of environmental impacts, adverse or beneficial, and feasible mitigation measures which could minimize significant adverse impacts identified,” as well as “[a] discussion of cumulative and growth-inducing impacts.” CEQA requires CARB to discuss “inconsistencies between the proposed project and applicable general plans, specific plans and regional plans,” which includes the State Implementation Plan (“SIPs”) and plans for the reduction of GHG emissions.

As discussed above, either penalizing uncertified ethanol or imposing significant certification costs on the ethanol supply chain would create incentives to reduce ethanol blending in California through a straightforward causal connection: increasing the cost of a fuel component threatens to decrease use of that component.

Despite this implication of the Proposed Amendments, the Draft Environmental Impact Analysis fails to analyze the possibility of and impacts resulting from lower ethanol blends in California. Again as already discussed, lower ethanol blending would result in higher emissions of PM and several other pollutants. Failure to consider and analyze these impacts is a failure to prepare an adequate environmental analysis under CEQA.

In addition to a general analysis of adverse environmental impacts, CEQA requires CARB to discuss inconsistencies between the Proposed Rule and any SIPs or other state plans regarding PM. This discussion is especially important given EPA’s recent decision to tighten the PM NAAQS, which impacts counties across California. According to the EPA figures below, the tightened standards will cause most of California to be in non-attainment for PM for years to come. CARB is therefore not analyzing the potential impacts of its own rule on one of the few fuel additives that can reduce PM emissions in the existing fleet, and without which California would struggle to meet PM standards.

**Response:** Please refer to Master Response 4 and the Recirculated EIA.

**Comment Letter 380**

2/20/2024

Michael O'Hare  
UC Berkeley

**380-1:** The commenter states, “CARB’s plans for assigning carbon intensity to biofuels greatly underestimate the real “carbon intensity” (climate warming effect of specific fuel uses) for all crop-sourced biofuels. The phenomenon of particular importance here, called ILUC for “indirect land use change”, has been known and studied at least since 2008; I was the principal investigator of CARB contract research at the University of California when ILUC was incorporated into LCFS estimates. In simplest form, by processes well-known to CARB staff, withdrawing goods from world commodity markets (for example, soybean oil in the US) sets in motion price changes that induce increased production of similar or substitutable goods (for example, palm oil in Indonesia) elsewhere, on land whose conversion to crops (usually from forest or cerrado) releases very large greenhouse gas (GHG) discharges directly attributable to the food-to-biofuel diversion.

The GTAP economic model used by CARB to estimate indirect land use change is seriously and systematically flawed in ways detailed in the “Report on the Economic Basis for GTAP and Use of GTAP Style Models in Biofuel Land Use Modeling” by Steve Berry, Timothy Searchinger, and Anton Yang, from the Yale Tobin Center for Economic Policy. This report has been separately submitted to CARB by its authors. The effect of continuing to use GTAP to estimate biofuel carbon intensity undermines the intent of the LCFS and will displace real GHG reduction with increased fuel use that actually increases global warming, in addition to causing extremely damaging biodiversity loss and cultural injury, especially in tropical forests.

CARB would better serve the climate policy goals of the LCFS by scoring the actual carbon intensity of biofuels than using GTAP to estimate land use change effects. I urge CARB to attend carefully to Berry et al’s critique and amend the LCFS carbon intensity scoring system accordingly.”

**Response:** Please refer to Master Response 2.

**Comment Letter 381**

2/20/2024

Mary Elizabeth

**381-1:** The commenter states, “Biofuel have better uses in the soil and I am speaking of manure and woody biomass. I live in Stockton where there is a biomass plant, DTE, which is the greatest source of stationary pollution. We live on this planet so when wood pellets from the US are used elsewhere we are contributing to global climate change – money is changing hands and the vulnerable suffer. There is a grey hydrogen plant that want to produce hydrogen from methane at the Port. Not enough requirements for mitigation and hydrogen interferes with the degradation of methane in the atmosphere. Any of these credits have to be phased out as soon as possible. I just received a notice of some organic oils being transported around to become biodiesel: Montana Renewables, LLC. Full lifecycle analysis is needed now. Climate Change is now.”

**Response:** The comment provides an opinion regarding biomass plant and grey hydrogen plant. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. Please refer to response to 381-2 below regarding life cycle assessment of the Proposed Amendments.

**381-2:** The commenter states, “Conduct and incorporate a full life cycle assessment of all air pollution and greenhouse gas (GHG) emissions for all pathways, and their implications for environmental justice communities.”

**Response:** Please refer to Master Response 5. As discussed on 57 through 61 of the Recirculated EIA, the LCFS calculates emission reductions on a full lifecycle basis for the fuel production, transport, and use; therefore, GHG emission reductions occur both in California and out-of-state. Staff calculated GHGs associated with each scenario.

Environmental justice is not an issue required to be analyzed in the EIA. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 382**

2/20/2024

Laura Haider  
Fresnans Against Fracking

**382-1:** The commenter states, “No Subsidies for Fossil Fuel Projects with Carbon Capture; I oppose the proposed Low Carbon Fuel Standard (LCFS) amendment that would allow petroleum projects using carbon capture and storage (CCS) to continue to generate credits beyond the phase-out date of December 31, 2040. Carbon pipelines had leaked.

**Response:** The comment provides an opinion in opposition to the Proposed Amendments. It does not raise issues related to the adequacy of the environmental analysis, and no edits to the Draft EIA are required in response to this comment.

**Comment Letter 388**

2/20/2024

Phoebe Seaton  
Leadership Council

**388-1:** The commenter states, “Increasing lipid-fuel consumption extends pollution burdens in oil refinery communities where these fuels are produced. It also drives deforestation as more land is converted to crop production, and it requires either the intensification of agriculture (i.e. greater pesticide and fertilizer use) and/or reduced food consumption amongst those who are already food insecure.”

**Response:** Please refer to Master Response 2.

**388-2:** The commenter states, “Livestock operations benefitting from lucrative credits for their supposed methane reductions are incentivized to maintain or even intensify their polluting management practices that foul the air and drinking water of local communities. Smaller and more sustainable farms that manage manure through practices that largely avoid methane creation cannot convert those beneficial practices into revenue through the LCFS, perversely creating a competitive advantage for massive livestock operations.”

**Response:** Please refer to Master Responses 1, 4 and 5.

**388-3:** The commenter states, “Furthermore, “carbon negative” factory farm gas facilitates and even encourages the polluting production of dirty hydrogen at refineries. It bears noting that CARB ignored the data-backed concerns raised by people living near industrial dairies and refineries utilizing factory farm gas credits to produce carbon negative hydrogen from fossil fuel in their “environmental justice” section.”

**Response:** Please refer to Master Response 1.



**Comment Letter 390**

2/20/2024

Matthew Sheets  
Land Stewards Project

**390-1:** The commenter states, “Because large industrial agriculture is able to take part in the LCFS program, the program has become the nation’s largest and most lucrative pollution trading scheme for factory farm biogas, perpetuating harmful practices rather than serving its environmental objectives. It is driving the construction of more factory farms and factory farm biogas projects in states far from California, causing severe harm to air, water, public health, rural economies, and overall quality of life in communities where Land Stewardship Project members live, raise their families, recreate, grow food, and grow old in. Communities that are centers for the dairy farming industry have been particularly effected due to dairy manure being the feedstock of choice for many factory farm gas projects in the Upper Midwest. This is having disastrous effects on an already suffering industry and the communities that rely on that industry.”

**Response:** Please refer to Master Response 1 and 3.

**390-2:** The commenter states, “Addressing inaccuracies in the Life Cycle Assessment that ignore associated up and downstream greenhouse gas emissions from factory farm gas production.”

**Response:** Please refer to the Recirculated EIA.

**Comment Letter 392**

2/20/2024

Sasan Saadat  
Earthjustice

**392-1:** The commenter states, “in the LCFS than waste fuels) “fails to steer [land use change] decisions towards low-[emission factor] areas and cannot prevent the conversion of higher-carbon land.” The study authors conclude that “this finding implies climate policy sequencing: first, global [land use] regulation needs to be in place, and only then should large-scale bioenergy be considered.” There is no such global land use regulation that safeguards against land conversion. On the contrary, most recent satellite data shows a clear trend of increasing deforestation and land conversion alongside rising soybean consumption in the biofuel sector.”

**Response:** Please refer to Master Response 2.

**392-2:** The commenter states, “The first two possibilities significantly increase greenhouse gas (GHG) emissions, destroy surrounding habitats, imperil biodiversity, and pollute the air and water. The land use change model in the LCFS assumes instead that the higher prices will lead to the third option – reduced demand. Reduced demand due to higher crop prices means the poorest people would eat less and be pushed into hunger. To examine the emissions effects of theoretically foreclosing this grim outcome, researchers fixed consumption in the GTAP model to control against any increase in food insecurity. They found that the impact on deforestation doubled, and land use change emissions increased by 41 percent, or an additional 10 gCO<sub>2</sub>e/MJ to the ILUC value for ethanol not currently accounted for by CARB.”

**Response:** Please refer to Master Responses 2 and 5.

**392-3:** The commenter states, “Staff’s analysis should evaluate the impacts of the specific regulation, separate from the benefits of federal mandates or other State regulations that would occur with or without implementation of the current proposal. Inclusion of these benefits improperly overstates the impacts of the proposal and should be avoided. Past LCFS analyses adhere to this construct. In 2018, for example, Staff included an adjustment to the GHG and air quality benefits to “eliminate double counting of emission reductions that are more appropriately attributed to other State and federal programs such as Advanced Clean Cars and Renewable Fuel Standard.”<sup>32</sup> However, the ISOR attributes 100% of the PM/NO<sub>x</sub> and GHG reductions associated with renewable diesel to the LCFS, even though much of these reductions are driven by federal mandates. Staff clearly detailed the methodology for attributing the incremental benefits of the LCFS and those to other programs in Appendix F of the 2018 ISOR and do not provide an explanation for changing the approach in the most recent ISOR.”

**Response:** Please refer to Master Response 4 and 5 and the Recirculated EIA for an updated GHG analysis of the Proposed Amendments.

**392-4:** The commenter states, “In rejecting a cap on lipid-based fuels contemplated in both Alternative 1 and the Comprehensive EJ Scenario, CARB argues that restricting those fuels will not achieve the greenhouse gas or air quality benefits secured under their proposed scenario, which allows unrestricted growth in biofuels. But correcting for the aforementioned modeling errors and relying on up-to-date research on air emissions would likely eliminate the presumed air and climate advantages portrayed under Staff’s proposed scenario. For example, relying on the same conservative methodology that CARB used in 2018 potentially negates all the climate benefits Staff estimated from rejecting the cap on virgin oils in Alternative 1.

Alarming, the ISOR invokes illusory public health benefits of using renewable diesel to justify rejecting a commonsense measure—capping lipid biofuels—that would deliver real air quality benefits by refocusing the LCFS’ benefits on zero-emissions technologies instead of combustion technologies. Unfortunately, Staff’s use of the California Transportation Supply (CATS) model does not allow for electric vehicle (EV) deployment to be dynamically modeled, so the benefits of electrification pathways are fixed under all scenarios. But it is unrealistic to assume that re-focusing the LCFS’s subsidy towards electrification pathways would have no impact on the breadth or immediacy of EV deployment.”

**Response:** The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. Please also refer to Master Response 2. No further response is required.

**392-5:** The commenter states, “Summary of Problem: Avoided methane crediting extravagantly rewards an unregulated industry with accounting that distorts the LCFS program, undermines transportation goals, and worsens environmental injustices for frontline communities.”

**Response:** The comment provides an opinion of the problem of avoided methane crediting but does not provide evidence to support the claim. Environmental justice is not an issue required to be analyzed in the EIA under CEQA. The comment does not raise issues related to the adequacy of the environmental analysis and no edits to the Draft EIA are required in response to this comment.

**Comment Letter 398**

2/20/2024

Daniel Chandler  
350 Humbolt

**398-1:** The commenter states, “Unfortunately, California Air Resources Board’s (CARB’s) latest Proposed Amendments to the Low Carbon Fuel Standard rely heavily on accelerating the rate of reduction of the LCFS Carbon Intensity (CI) benchmark without correcting flawed CI scoring. This would increase production of renewable diesel made from soybean oil, canola oil and other seed oils, increasing both food insecurity in the near term and unsustainability in the medium term as more primary forests and savannas are converted to croplands. CARB must go back to the drawing board for a major reset of California’s LCFS.”

**Response:** Please refer to Master Response 2.

**398-2:** The commenter states, “In this comment we suggest changes to the LCFS that we hope will be useful to CARB in its review. These recommendations include:

- Update and Improve, or replace, models used to calculate the carbon intensity (CI) of crop based fuels (Recommendation 1).”

**Response:** As discussed on pages 5-6 of the Recirculated EIA, LCFS standards are expressed in terms of the CI of gasoline and diesel fuel and their substitutes, measured in grams of carbon dioxide equivalent per megajoule of fuel energy (gCO<sub>2e</sub>/MJ). Each step in the life cycle of the fuel, including production, transportation, distribution, and consumption, is modeled to determine the CI of the fuel. In addition to the direct life cycle emissions, indirect land use change emissions are calculated on a fuel-by-fuel basis and included in their total CI. The life cycle analysis models used to calculate the CI of transportation fuels are updated each time CARB updates the LCFS program. Please also refer to Master Response 5.

**398-3:** The commenter states,” Recommendation 1: Update and Improve, or Replace, Models used to calculate CI of crop-based fuels. Other well-respected models, both national and international, that we have seen referenced in scientific journals, workshops and European laws calculate carbon intensity values of transportation fuels made from fossil fuels virtually identical to CARB’s GREET model estimates, for diesel the CI is 94gCO<sub>2e</sub>/MJ.<sup>1</sup> However, their calculated values for the carbon intensity of crop-based biofuels made from oilseeds such as soybean, palm, canola or sunflower seed are vastly different from CARB’s GREET/GTAP/AEZ-EF model estimates. For example, the GLOBIOM Model used by the European Union (EU) estimates the carbon intensity of soybean oil to be 182.9gCO<sub>2e</sub>/MJ,<sup>2</sup> while CARB’s GREET/GTAP/AEZ-EF models estimate it to be around 55gCO<sub>2e</sub>/MJ. Two well respected US models, ADAGE, Applied Dynamics of the Global Economy, developed and maintained by RTI International and GCAM, Global Change Assessment, developed and maintained by the University of Maryland, were studied by the EPA during its 2023 CI Model Workshop related to the Renewable Fuel Standard (RFS). ADAGE and GCAM estimates of CI values for oil-seed diesel differed from each other but were both closer to those of GLOBIOM rather than the

GTAP combo CARB uses. The substantial difference in CI estimates results primarily from the models' different estimates of indirect land use change (ILUC) emissions.

The GLOBIOM, ADAGE and GCAM models all estimate the carbon emissions of any increase in seed oilbased diesel to be greater than the fossil diesel they replace. The GTAP and AEZ-EF models used by CARB, on the other hand, calculate lower indirect land use change (ILUC) effects for these fuels, and as a result lower CI scores. This difference explains why CARB is still encouraging the production of more crop-based renewable diesel.

Last year's EPA Workshop on CI Models looked at three models: ADAGE, GCAM and GTAP, as it sought to estimate the impact of an increase of 1 billion gallons of renewable diesel. The ADAGE model estimated a net increase in greenhouse gas emissions of 35.5 kgCO<sub>2</sub>e/gal, while the GCAM model estimated a smaller, but still significant, net emissions increase of 5.4 kgCO<sub>2</sub>e/gal. Only GTAP estimated a net decrease in emissions of 5.4 kgCO<sub>2</sub>e/gal.

One is left puzzled as to why the EPA went ahead and increased the volume mandates under the RFS for 2023-2025 since 2 out of the 3 models it consulted indicated an increase of 1 billion gallons of biomass based diesel would result in more not less carbon emissions.<sup>4</sup> A recent UCS blog suggests that the EPA raised volume requirements partly because of the large increase in US renewable diesel production capacity that was already in process, especially in California.<sup>5</sup> In other words, it appeared to be a fait accompli.

The IPCC's 2019: Climate Change and Land report comments on the "large variance in the outcomes of these models" and the "deep uncertainty" attached to their parameters, the associations they model and the data sets they use.<sup>6</sup> The report further notes that as a result of this uncertainty "it is important to assess the impact of mitigation actions on the broader environment such as biodiversity, ecosystem functioning, air quality, food security, desertification/degradation and water cycles." But CARB continues to approve pathways solely on the basis of the deeply uncertain and narrow CI score calculated by its models.

CARB needs to reevaluate the GTAP and AEZ-EF models it uses to estimate carbon intensity and indirect land use change for its crop-based alternative fuel pathways. CARB CI scoring assumes that the rate of increase in a feedstock's supply or the size of its volume increase does not affect its CI score, but this is unlikely to be an accurate description of the relationship.<sup>8</sup> The crucial need for caps, that we discuss under Recommendations 2 and 3 in this comment, is partially a result of CARB's flawed CI scoring.

Several researchers have proposed abandoning computer modeling for land use change in favor of a more straight-forward carbon opportunity cost of land approach.<sup>9</sup> This approach is based on the idea that land is more valuable storing and sequestering carbon than producing biofuels.

Comparison Of CARB's GTAP and the EU's GLOBIOM models: There are many differences that explain the models very different ILUC results for oilseed feedstocks.<sup>10</sup> The GTAP-BIO model assumes greater productivity increases result from feedstock price increases, though

historical data does not seem to support this assumption. The GTAP-BIO model also assumes that consumers will buy fewer vegetable oils as prices rise in response to greater biofuel production. However, world population and per capita incomes continue to increase and vegetable oil consumption is increasing more rapidly than most food types making this an unreasonable assumption. Crushing more soybeans to produce soybean oil for biofuels also produces more of the co-product soybean meal which is used as animal feed. The GTAPBIO model predicts that farmers will substitute this cheaper feed for other feeds, while the GLOBIOM model predicts that the lower price will encourage more livestock production and hence increase demand for complementary feeds such as cereals.

The two models categorize land differently. In the GTAP-BIO model there is a “cropland pasture” category that refers to pasture land that was previously cropland and is easily converted back to cropland with little loss of carbon. This is the category that accounts for most of the land conversion in the US and Brazil despite any evidence to support it.<sup>11</sup> In Brazil the Soy Moratorium for the Amazon Region has reduced land conversions for soybean cultivation in the rainforest area, but as a result the unprotected, partially forested Cerrado Region has seen dramatic clearing of land for soy. The GLOBIOM model includes an “other natural land” category which refers to unmanaged natural land that has a lower carbon stock than forests but higher than the cropland pasture category of the GTAP-BIO model. This is the land category that absorbs much of the land conversion resulting from increased biofuel production in the GLOBIOM model. Certainly for Brazil which has accounted for over 50% of the growth<sup>12</sup> in soybean production since 2008 the GLOBIOM model’s description of land use change is more accurate.

**Response:** As discussed on page 69 of the Draft EIA, CARB estimates the indirect land use change effects of biofuel crop production using the Global Trade Analysis Project (GTAP) model, which is a computer model developed and supported by researchers at Purdue University. Within the GTAP’s scope, there are 111 world regions, some of which consist of single countries, others of which are comprised of multiple neighboring countries. Each region contains data tables that describe every national economy in that region, as well as all significant intra- and inter-regional trade relationships. The data for this model are contributed and maintained by more than 6,000 local experts. Please also refer to Master Response 2 for a description of proposed amendments to the LCFS regulation related to land use change emissions quantification and other guardrails regarding use of crop-based fuels.

**398-4:** The commenter states, “In order to avoid existential threats to the global food supply, CARB must cap the volumes of biomass based diesel eligible for LCFS credits, starting 1/1/25. The initial annual cap should be set at volume levels recorded from the end of 2020 through the beginning of 2021. According to CARB dashboard data, this would entail setting an annual cap for renewable diesel around 800 million gallons and for biodiesel around 350 million gallons. The growth rate of renewable diesel credits jumped to unsustainable levels during the second half of 2021. Annual US renewable diesel production capacity increased from under 500,000 gallons in 2017 to close to 1 billion gallons in 2020, to about 1.75 billion gallons in 2021 and about 4 billion gallons in January 2024. There is not enough feedstock currently being grown to allow all these facilities to operate at capacity without seriously harming both

global vegetable oil markets and primary forests. The US needs to scrap further expansion plans, which are being driven mostly by California's LCFS credits.

The recent increase in renewable diesel capacity is primarily the result of converting old petroleum diesel refineries to renewable diesel refineries. This is an attractive option for oil companies burdened with excess refining capacity since refinery conversion to biofuels is cheaper than refinery decommissioning. Hence, capping the amount of renewable diesel eligible for LCFS credits at 2020 or 2021 levels would merely result in earlier decommissioning of old, converted refineries.

In short, the growth in US renewable diesel production capacity needs to be reversed. There is still time to prevent some of the land use conversions being encouraged by the spike in vegetable oil prices the vast increase in US renewable diesel capacity has caused.

An annual cap for corn ethanol should also be set around 1 billion gallons.

The importance of these caps should not be underestimated. As the World Resources Institute recently stressed: "Because vegetable oil markets are linked globally, increased demand for vegetable oil anywhere increases deforestation pressure everywhere."

The Union of Concerned Scientists, among many other NGOs, has called for capping the volume of crop based biofuels that qualify for LCFS credits.

Vegetable oil is expensive, its availability is limited, and expansion is linked to deforestation, so the large-scale diversion of vegetable oil to fuel production is an especially bad idea....The predictable next step is to move vegetable oils from renewable diesel production to jet fuel production; claiming generous tax credits while still generating Renewable Fuel Standard (RFS) and LCFS credits....The oil industry was once the primary opponent of the LCFS but they have found a way to work the system to their advantage.

Based on the conviction that any increase in the supply of crop-based renewable diesel or biodiesel creates too much pressure to convert more land to agriculture, especially in the tropics, the EU government disallowed these fuels from counting toward recently mandated carbon emission reductions in the aviation and maritime industries. This exclusion includes intermediate crops, palm fatty acid distillates and all other palm- and soy- derived materials as well. The EU regulations for the aviation and maritime industries require all food- and feed crop-based fuels to assume the same emission factors as the least favorable pathway.

CARB has proposed to deal with the deforestation risk associated with increasing renewable diesel and other crop-based biofuels by requiring independent feedstock certification for crop-based pathways. This would require tracking crop-based feedstocks back to their point of origin to verify that they were not produced on recently deforested cropland. The Union of Concerned Scientists clarifies why this is not a solution:

Tracking the chain of custody won't work because there is more than enough soybean oil produced on existing cropland in the US, Argentina and Brazil to produce 100 percent of California's diesel fuel. The problem with chain of custody is that California won't be tracking the chain of custody of vegetable oils being used to replace those diverted from global markets.

China and India are large importers of soybeans and vegetable oils; they will become the buyers of the crops produced on newly converted natural lands.

When the EU adopted caps on crop-based biofuels in 2018, the EU Commission pushed for more stringent caps. While it could not convince the heavily lobbied EU Parliament to adopt them, countries were given the option of setting lower caps and subtracting any cap reduction from their overall road transport emissions reduction target. Several EU countries have adopted lower caps for crop-based biofuels. Germany's cap is about 40 percent lower than the EU cap, Spain's 50 percent lower, Finland's and Estonia's about 65 percent lower, and the Netherlands 80 percent lower. Countries were also given the option of not allowing high Indirect Land Use Change (ILUC) feedstocks to count towards their mandated emissions reductions targets. So far only palm oil has been designated a high ILUC feedstock; hence it will not be allowed to count towards any EU country's emission reduction targets after 2030. But countries have been permitted to exclude both palm oil- and soybean oil-based biofuels from counting towards their mandates. France, the Netherlands and Denmark have all excluded both palm oil- and soybean oil-based biofuels from credits. Discussions as to whether soybean oil-based biofuels should also be officially classified as a high ILUC feedstock are ongoing."

**Response:** Please refer to Master Responses 2 and 5.

**398-5:** The commenter states, "Eliminating incentives for crop-based biofuels could prove to be one of the world's best opportunities for stopping the conversion of natural land to agriculture. The dollar value of LCFS credits that have been received by crop-based biofuels is large. Over half of all LCFS credits from 2011-2022, worth about \$22 billion in 2023 dollars, went to providers of crop-based fuels.<sup>38</sup> Last year approximately \$2 billion worth of LCFS credits went to suppliers of crop-based fuels."

**Response:** Please refer to Master Response 2. The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment's potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**398-6:** The commenter states, "Recommendation 6: Consider the negative environmental effects not taken into account by models used to estimate a fuel pathway's CI when deciding whether a pathway should receive LCFS credits. Many negative environmental impacts of



crop-based alternative fuels are not considered when carbon intensity scores are calculated by CARB. These effects should be identified, monitored, and measured. This exercise could help to clarify which pathways need to be removed from the LCFS.

Negative Environmental Effects of Biofuels on US agriculture:

(1) Crops grown for the production of ethanol (corn) and biodiesel and renewable diesel (soybeans) cover at least 20 percent of the entire US cropland acreage, according to the USDA's Census of Agriculture 2017 (results from the 2022 Census are not yet available). The 2017 Census indicated that 320 million acres of cropland were harvested in 2017. Over half of the harvested acres were planted in either corn (almost 91 million acres) or soybeans (90 million acres). According to the USDA's Economic Research Service 45 percent of corn harvested in the US is used to produce ethanol and about 21 percent of soybeans harvested is used to produce biofuels. Hence, about 41 million acres are being used annually to grow corn to produce ethanol and 19 million acres to grow soybeans for biodiesel or renewable diesel, suggesting that 60 million acres, almost one fifth of cropland, is being used to grow crops for biofuels. The amount of US cropland acreage used to produce biofuels is currently increasing. While the US has historically exported about half of its soybean crop, soybeans and their derived product exports have dropped significantly recently, as domestic renewable diesel production has increased. Also, in mid 2023, for the first time over 50 percent of US produced soybean oil was used to produce biofuels. Exports of soybean meal, the co-product of soybean oil, on the other hand reached record levels.

(2) Corn and soybeans grown to produce biofuels are major contributors to the worsening biodiversity crisis in rural areas in the US. The massive use of corn and soy output for biofuel production in the US has fostered a monoculture system of farming which has degraded soils and eliminated complex insect, bird and plant communities. Not only has this monoculture system reduced soil fertility it has reduced the ability of the ground to absorb water either for crops or aquifer recharge. Since corn and soy farmers do not require pollinators to produce their crops, the loss of bees and other pollinators in rural areas has not been a large concern to them, but has been a problem for other farmers. Crop-based biofuels and the monoculture they have encouraged have contributed mightily to the destruction of nature in our rural areas.

(3) Corn and soybeans grown to produce biofuels are major contributors to the pollution of ground and surface water in the US. Fertilizers are responsible for substantial ground and surface water pollution. The Farm Bureau estimates that about half of the fertilizer (nitrogen, phosphate and potash) consumed annually in the US is used to grow corn, another 10% is used to grow soybeans. This suggests that 22 percent of the all the fertilizer used on crops in the US is used for corn to produce ethanol, and over 2 percent is used for soybeans to produce biofuels, i.e. almost one fourth of synthetic fertilizer use in the US is used on crops grown to produce biofuels.

(4) In addition, recent USDA NASS Chemical Use Surveys showed that corn farmers applied almost 2 pounds of herbicides per acre in 2021 and soy farmers almost 1.5 pounds of

herbicides per acre in 2020. Corn and soy have traditionally been the greatest users of pesticides per acre (including insecticides and fungicides as well as herbicides).

(5) Corn and soybeans grown to produce biofuels are major contributors to the unsustainable withdrawal of water from US aquifers. The 2017 Census of Agriculture reported that 54 million acres of cropland were irrigated in 2017. (See Historical Census Table 1: 2017 and earlier years, NASS, USDA) The crop with the most irrigated acreage was corn which accounted for 12 million acres of irrigated cropland. Soy acreage was second with 9 million acres irrigated.<sup>48</sup> This suggests that 5.4 million acres of corn were irrigated to produce ethanol and 1.9 million acres of soy were irrigated to produce biofuels; or 13.5 percent of total irrigated acreage was used to produce biofuels. Increasingly, the source of water for irrigation is groundwater rather than surface water. As droughts are forecast to increase, the US will need to rely more on irrigation for both corn and soybeans. The Ogallala-High Plains Aquifer extends from South Dakota to Texas and provides water for eight states, but it is being depleted at an unsustainable rate. Irrigation is responsible for 90 percent of Ogallala groundwater withdrawals.

(6) The production of ethanol, biodiesel and renewable diesel from corn and soybeans are also major users of water. The production of water requires more water than the production of gasoline, requiring 3 gallons of water for every gallon of ethanol produced, compared to 2-2.5 gallons for gasoline. Most ethanol producers are located in the Midwest and rely on the Ogallala-High Plains Aquifer for their water needs.

**Response:** Please refer to Master Response 4 regarding impacts to water quality and Master Response 2 with regard to crop-based biofuels.

Regarding potential impacts to biodiversity, page 70 of the Draft EIA acknowledge that depending on the type of crop, location, and need to convert lands, habitat destruction could occur, resulting in the loss of biodiversity. Potential biological resource impacts could be reduced to a less-than-significant level by mitigation measures prescribed by local, state, federal, or other land use or permitting agencies (either in the U.S. or abroad) with approval authority over the particular development projects. However, because CARB has no land use authority, Mitigation Measure 4-2 is not within its purview to reduce significant impacts to less-than-significant levels.

Regarding water supply, please refer to Master Response 4 and Response to Comment 299-16. As part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid off-site groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions. The comment does not raise issues related to the adequacy of the environmental

analysis and no edits to the Draft EIA are required in response to this comment. No further response is required.

**Comment Letter 401**

2/20/2024

Tess Dornfeld

**401-1:** The commenter states, “There’s no possible way to justify incentivizing a fuel that’s at least as bad and up to 24% worse than gasoline in carbon intensity. What is the point of the LCFS? If it’s to make money off harming small farmers in Minnesota, off the trafficking of Native women and girls during pipeline construction, off destroying rural water sources with pollution and overuse, then job well done.”

**Response:** Please refer to Master Response 4 and Response to Comment 299-16 regarding impacts to water quality. As part of subsequent project-level planning and environmental review, the project proponent shall coordinate with the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid off-site groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions.

**401-2:** The commenter states, “You have more than enough information to address the damage of the LCFS when it comes to ethanol and CCS, and methane crediting, life cycle assessment, and factory farm biogas.”

**Response:** Please refer to the Recirculated EIA and Master Responses 1, 2 and 4.

**Comment Letter 407**

2/20/2024

Brittany Benesi  
ASPCA

**407-1:** The commenter states, “Originally intended as a tool to combat climate pollution in the transportation sector, the LCFS has become one of the nation’s largest and most lucrative pollution trading enterprises for factory farm biogas. This shift has inadvertently perpetuated harmful outcomes rather than serving its original environmental objectives. By offering yet another revenue stream, the LCFS is driving the construction of more factory farms and factory farm biogas projects in states far from California, causing significant harm to animals, air, water, public health, rural economies, and overall quality of life. Current practices in the LCFS, such as “avoided methane crediting” and potentially inaccurate life cycle assessments, not only enable pollution but disproportionately harm low-income communities and communities of color where factory farms are often located.”

**Response:** Please refer to Master Responses 1, 4 and 5 and the Recirculated EIA.

**407-2:** The commenter states, “Address the potential for inaccuracies in the Life Cycle Assessment that ignore associated up and downstream greenhouse gas emissions from factory farm gas production.”

**Response:** Please refer to the Recirculated EIA and Master Response 1.

## **2. Individual Comments and Responses on the Recirculated Environmental Analysis**

### **Comment Letter R1**

2024/08/16

Vivian Blackstone

**R1-1:** The commenter states, “for the benefit of the majority of people, we need to limit the negative impact of low carbon fuels. May the majority of people be able to afford the proper transportation to do this.”

**Response:** The comment addresses general concerns and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R2**

2024/08/16

LII D

R2-1: The commenter states, “On January 2, 2024, CARB released for public review the Draft Environmental Impact Analysis for the Low Carbon Fuel Standard Regulation (Draft EIA), which assessed the potential environmental impacts of implementing the Proposed Amendments. The Draft EIA concluded implementation of the Proposed Amendments could result in: beneficial impacts to greenhouse gas; less than significant impacts, or no impacts, to energy, odors, mineral resources(short-term construction-related), population and housing, public services, recreation, and wildfire; and potentially significant[indirect/secondary] adverse impacts to aesthetics, agriculture and forestry resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources (long-term operational-related), noise, transportation, tribal cultural resources, and utilities and service systems. The Draft EIA was included as Appendix D to the ISOR. CARB circulate the Draft EIA for public review and comment for a period of 45 days that began on January 5, 2024, and ended on February 20, 2024.”

**Response:** The comment includes an excerpt from the Recirculated Draft EIA and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R3**

2024/08/28

Alex Meyer

**R3-1:** The commenter states, “There is a serious risk that hydrogen fuel cell technology for transportation will die on the vine. This situation needs to be addressed urgently.

When I started driving an FCEV car in 2017, the cost of hydrogen was \$17 per kg. Now, hydrogen is \$36/kg. The difference is the loss of subsidies.

As a result of inadequate subsidies and lack of supply, buyers are turning away from hydrogen-powered vehicles. Because of this, energy companies are hesitating to invest in hydrogen fueling stations. This is a vicious cycle that endangers the prospect of de-carbonizing transportation.”

**Response:** The comment addresses general concerns related to hydrogen fuel technology and costs. This comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R3-2:** The commenter states, “Battery-based electric vehicles are not a solution. They require large-scale mining of toxic substances. They require dedicated parking that is incompatible with high-density and/or low-income housing. And, they take too long to recharge during long trips.

Please bring back reasonable hydrogen prices at the pump.”

**Response:** The comment states opposition to battery-based electric cars and promotes hydrogen fuel. This comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.



**Comment Letter R4**

2024/08/30

Kansas Corn Growers Association

J.D. Hanna, President

**R4-1:** The commenter states, “Thank you for the opportunity to provide written comments regarding the proposed Low Carbon Fuel Standard (LCFS) amendments. The Kansas Corn Growers Association (KCGA) represents more than 1,100 members on state and national legislative and regulatory issues and actively works with other organizations to maximize the voice of Kansas corn producers.

KCGA has previously submitted comments highlighting the vital role of biofuels, and flex-fuel vehicles (FFVs) in reducing carbon emissions in transportation fuel and meeting California’s climate goals. Biofuels have played a significant role in reducing carbon emissions under the LCFS program thus far and are poised to continue this trend into the future. Biofuels can play an even larger role, further reducing carbon emissions if the correct blend of policies are put into place.

Reiterating the National Corn Growers Association (NCGA) comments from the April Workshop, we appreciate CARB’s additional modeling and consideration of increased step-downs of 7% and 9% in carbon intensity (CI). Increasing the step-down to 9%, instead of the originally proposed 5%, is an appropriate value that can reset the current credit-to-deficit ratio and make use of the existing credit bank. The 9% step-down is necessary, as it will remove about 16 million credits from the program, a needed adjustment to stabilize the market and leave an adequate number of deficits in the bank.

However, KCGA has serious concerns over the proposed amendments to the LCFS. Growth Energy’s comments in this round of input, as well as their comments on the April workshop, and the NCGA comments on the April workshop demonstrate these concerns. While we appreciate the California Air Resources Board’s (CARB) efforts to decarbonize California’s transportation sector, these undue requirements are not based on sound science and actively work against CARB’s goal. Some of these proposed amendments will result in slower decarbonization, increased adoption costs, or both.

Of particular concern are the proposals on sustainability certification, land use change (LUC) penalties, and indirect land use change (ILUC) penalties. Once again, past and current comments from Growth Energy and NCGA are pertinent here.

Neither CARB’s Economic Impact Analysis (EIA) from the April Workshop, nor their recirculated EIA addresses the issue of the sustainability certification requirement’s financial burden. Further, the inclusion of LUC and ILUC penalties on corn production, alongside the sustainability certification requirements, means corn farmers are double penalized. Such requirements will impose significant regulatory burdens on credit generators, the costs of which will ultimately fall on farmers. Production agriculture is a high-risk, low-margin industry. These types of burdens will force small-to-mid-size family farms out of the industry.”

**Response:** The commenter inappropriately refers to the EIA as the “Economic Impact Analysis instead of the Environmental Impact Analysis and further states that the EIA and recirculated EIA do not evaluate the financial implications of the sustainability certification requirements. The commenter also raises issues related to CI scores and land use changes. For issues related to CI scores and land use changes, please refer to Master Response 2. In regard to the lack of financial analysis, the EIA is not meant to address economic or financial issues associated with regulatory compliance with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comment document. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R4-2:** The commenter states, “To this end, KCGA echoes NCGA’s recommendation that CARB considers a domestic aggregate compliance approach similar to the Renewable Fuel Standard (RFS), enforced by the U.S. Environmental Protection Agency (EPA). Developing an on-farm crediting system that rewards innovative practices proven to reduce carbon emissions would be a much more effective solution. Our members feel that such a system should be practice-neutral and be flexible enough for farmers to be innovative in finding solutions that work for their operation and the climate. This would lead to more tangible reductions in CI and support the continuing goal of the LCFS.”

**Response:** The comment encourages CARB to considers a domestic aggregate compliance approach similar to the RFS, enforced by the U.S. EPA. This comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R4-3:** The commenter states, “Unfortunately, CARB is ignoring historical data in their scoring of LUC and ILUC. As has been pointed out by numerous organizations, increasing biofuel production does not result in food system impacts. The two images below are from NCGA and Growth Energy comments. Both demonstrate the significant increases in yield that farmers have achieved over the past century, all while maintaining or decreasing total planted acres while growing the crop more sustainably. It is hard to come up with a logical reason for such harsh LUC and ILUC penalties when corn acres are indisputably unchanged over the past century.

The increases in corn yield can be directly attributed to advancements in genetics and plant breeding, and improvements in sustainable production practices. The development of better hybrids and corn seed has enabled farmers to use less water, fertilizer, and other inputs, all while increasing yield. Meanwhile, farmers have adopted better agronomic practices that have improved soil fertility, reduced runoff, improved water and soil retention, and better withstand climate change. Further, yield and production are expected to continue to increase over the next decade, despite flatlining planting acres, as USDA’s long-term projections show a two

bushel per acre increase every year through 2032. These facts have been routinely ignored by CARB's policy makers."

**Response:** While this comment does not raise issues related to the adequacy of the Recirculated EIA, the comment expresses disagreement with CARB's modeling and methods to determine ILUC values within the LCFS Regulation, particularly for corn. For issues related to ILUC values, please refer to Master Response 2. This comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R4-4:** The commenter states, "Higher blends of ethanol have already been pivotal in reducing California's transportation sector's carbon emissions. This comes despite ethanol's capabilities being limited due to CARB's inability to approve E15 in the state, making California the only state not to approve its sale. Not only is E15 better for the environment than the baseline fuel with lower carbon emissions, it comes with significant savings to California consumers. Studies show that E15 can save consumers an average of 16 cents per gallon, a significant amount of savings given California's high retail gasoline prices. As Growth Energy states in their comment, if CARB not only approved E15 but used it to replace E10, this switch would be responsible for the GHG-reduction equivalent of removing more than 400,000 ICE vehicles from California's roads without negatively impacting California drivers or changing the number of planted acres. This is a common sense approach that should be approved without controversy if CARB wants to achieve its greenhouse gas (GHG) reduction goals.

Further demonstration of ethanol's potential role in achieving CARB's goal is the success of E85 in the state. We appreciate CARB's update of the California Transportation Supply (CATS) Model that recognizes the value of carbon capture utilization and sequestration (CCUS) in reducing the CI of E85. More than 118 million gallons of E85 were sold in California in 2023 alone. CARB would be showing a strong commitment to achieving their goals, regardless of the technology, by further incentivizing additional gallons of E85."

**Response:** The comment discusses benefits of higher ethanol blend fuels and does not raise significant environmental issues related to the analysis in the Recirculated EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R5**

2024/09/12

Rafaela Martinez

**R5-1:** The commenter states, “Grandes empresarios tienen el deber de no empeorar la contaminación para todos”

**Response:** The comment states that businesses should not increase pollution for the general public. This comment does not raise significant environmental issues related to the analysis in the Recirculated EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R6**

2024/09/12

Dante Butler

**R6-1:** The commenter states, “I could focus on the deaths and injuries resulting from past actions of our elected officials (by ignorance or negligence); I could shine light on the present day poisoning that is both proven and prevalent, however, I want to focus on the best possible future where your voters live long enough to support you when you need them like you are going to support them and their families by regulating the pollution from the airline industry. Thank you in advance for making the right decision.”

**Response:** This comment does not raise significant environmental issues related to the analysis in the Recirculated EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R7**

2024/09/23

Dennis Clarke

**R7-1:** The commenter states, “It appears unfair for Tribal Casinos in California to bring Nevada/ Phoenix diesel in California. This would avoid LCFS and GHG taxes. Whereas California Truck stops and gas stations have to pay these taxes. California is loosing lots of taxes to promote our clean energy agenda.”

**Response:** The comment addresses general concerns and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required..

**Comment Letter R8**

2024/09/23

California State Legislature

Juan Carrillo, Assemblymember, 39th District et al.

**R8-1:** The commenter states, “We, the undersigned members of the California State Legislature, are writing to express our serious concerns regarding the recent 15-Day Changes to the Proposed Amendments to the Low Carbon Fuel Standard (LCFS) Regulation. Specifically, we are troubled by the proposal’s lack of ambition and arbitrary restrictions on compliance options, including biofuel feedstock limitations, which we believe may have unintended and adverse consequences.

We understand that for the LCFS program to succeed, higher credit prices are needed to drive investment and innovation. The 15-Day Change package recognizes this and increases the program ambition but does not go far enough.<sup>1</sup> At least a 40% economy-wide reduction in greenhouse gases (GHGs) is required by law,<sup>2</sup> transportation fuels are the biggest source of GHG emissions,<sup>3</sup> yet the LCFS 15-Day Package only targets a 30% reduction by 2030.

CARB should set more ambitious LCFS targets, in line with our economy-wide GHG reduction goals, and following legislatively directed concepts such as achieving the maximum technologically feasible and cost-effective GHG emissions reductions.

Instead, the 15-Day Package arbitrarily limits compliance options in a way that conflicts with legislative direction. The proposed limits would impose unnecessary burdens on fuel producers and consumers without significantly enhancing the program’s environmental outcomes. The result of the proposed 15-day changes will be higher credit prices for less GHG abatement, which should not be the goal of CARB. We are also concerned this rulemaking will impact other states who are considering implementing their own LCFS programs.”

**Response:** The comment addresses general concerns related to the 15-Day Package and does not raise significant environmental issues related to the analysis in the Recirculated EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R8-2:** The commenter states, “The restrictions on feedstocks, with a 20% cap on soy- and canola-derived biomass-based diesel (BBD), is concerning as it does not follow scientific modeling and comes with severe unintended consequences. CARB’s own modeling and conclusions presented in its workshop on April 10, 2024, shows that an artificial cap on vegetable oil feedstocks is unwarranted and would only increase fuel prices and harm air quality. With the implementation of a cap on BBD feedstocks, a phaseout of BBD pathways, and even more restrictive and costly traceability and verification system, this proposal will only lead to more combustion of fossil diesel fuel, higher fuel prices at the pump, and poorer air quality. It would also significantly harm the transition of aviation sector to sustainable jet fuels. CARB should therefore reject the imposition of a vegetable oil cap and adopt a targeted, risk-

based approach to sustainability requirements which does not penalize sustainable U.S. fuels and feedstocks.”

**Response:** Please refer to Master Response 2. In addition, the soy/canola/sunflower oil provision referred to by the commenter does not directly apply to alternative jet fuel.

**R8-3:** The commenter states, “The proposed changes to indirect accounting for low-CI electricity limits utilization of renewable electricity for production and processing to only electrolytic hydrogen. The 2022 Scoping Plan highlights hydrogen’s critical role across multiple sectors, projecting that roughly half of all hydrogen in 2045 will come from biogenic sources. Restricting low-CI electricity benefits to electrolytic hydrogen alone undermines California’s broader decarbonization goals, as much of the hydrogen supply will require flexibility in electricity sourcing and omitting half of the needed renewable hydrogen production will leave emissions on the table.

Most renewable electricity, regardless of end user, originates off-site at distant wind, solar, hydroelectric, or geothermal facilities and is delivered to customers indirectly via the grid. Similarly, the LCFS should allow all hydrogen process energy, which accounts for approximately 30% of liquid hydrogen’s carbon intensity, to be treated equitably, to fully utilize low-CI electricity for decarbonization.”

**Response:** The comment addresses general concerns and does not raise significant environmental issues related to the analysis in the Recirculated EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R8-4:** The commenter states, “Allowing all hydrogen production pathways to use low-CI electricity maximizes environmental and economic benefits. Moreover, electrolytic hydrogen faces challenges such as grid access to allow hydrogen producers to procure renewable electricity and the need for supportive electric sector policies. The LCFS should ensure the ability to maximize the decarbonization potential for biogenic hydrogen that is necessary for achieving our carbon neutrality and zero-emission transportation goals.

Furthermore, advanced pyrolysis is omitted as a hydrogen production pathway which is a promising mitigation and economically viable tool to manage the excess biomass from sources like agricultural waste, forestry residues generated from wildfire mitigation activities, and even methane conversion – all resulting in physical carbon that is not emitted into the atmosphere.

These pathways are supported by grants from the State and the best available science from our national laboratories. CARB should list biomass gasification to hydrogen as a fuel pathway classification to drive these investments that will help the state further manage excess biomass that has substantial environmental co-benefits for our communities.”



**Response:** The comment addresses general concerns related to hydrogen fuel pathways and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R8-5:** The commenter states, "The 15-Day Package also proposes various arbitrary phase-outs for recognition of the benefits of capturing and utilizing methane from organic waste as a renewable fuel. Methane is a highly potent short-lived climate pollutant and capturing it for productive use is one of the most cost-effective strategies to rapidly reduce the rate of warming and contribute significantly to global efforts to limit temperature rise to 1.5° C.<sup>4</sup> The legislature has repeatedly emphasized the importance of organic waste methane reduction and support for beneficial uses of biomethane derived from this captured methane.<sup>5</sup>"

**Response:** The comment addresses general concerns related to methane and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R8-6:** The commenter states, "CARB should not propose phasing out LCFS crediting for methane capture untethered to any long-run strategy to ensure continued methane abatement. It is unwise and irresponsible to propose an arbitrary phase-out of avoided methane crediting without a detailed plan for replacement policies in both the waste and dairy sectors. It also dissuades the very projects that California needs to build prior to 2030 to meet its short-lived climate pollutant goals."

#### **4. Suggested Alternative Approach**

We believe a more effective way to best meet our climate goals, while maintaining a healthy LCFS market, would be to simply focus on overall ambition of the program while maintaining technological neutrality. Instead of restricting feedstocks or imposing other arbitrary limits to manipulate credit prices, we believe CARB should focus on tightening the carbon intensity reduction targets within the LCFS framework. By setting more ambitious goals for GHG emissions reductions and allowing the market to determine the most efficient path forward, we can maximize emission reductions while creating a healthy market that will drive both near-term action and long-run innovation in clean fuels.

#### **5. Conclusion**

The LCFS is designed to reduce the carbon intensity of transportation fuels, helping California lead the nation in the fight against climate change. By promoting cleaner, renewable energy sources and reducing greenhouse gas emissions, the LCFS contributes to a healthier environment for all Californians and beyond as other states look to emulate our program. It is imperative that California continue to lead the nation on climate policy and not minimize this

successful program. While we fully support the goal of reducing GHG emissions and advancing California's climate leadership, we urge CARB to reconsider its 15-day package and eliminate arbitrary limits, such as the proposed feedstock restrictions. We believe that a more effective approach lies in focusing on the overall ambition of the LCFS targets while preserving a level playing field for all technologies. This will better serve our environmental objectives and ensure that the LCFS remains a robust marketplace for investment.

We would also note that we believe that this approach will not significantly raise fuel prices, despite recent criticism from the oil industry. Recent analyses show that retail fossil fuel prices are strongly influenced by many factors (e.g., global events, holiday weekends, seasonal fluctuations, refinery disruptions and decisions about production that affect supply, refinery pricing decisions, seasonal fuel blends, and taxes) and fossil fuel producer pricing strategies are complex, reflecting local and regional market conditions. As CARB has noted before: "The reality is that the actual cost pass-through from LCFS to retail gasoline or diesel prices is uncertain, that there is no correlation between historical LCFS credit prices and gasoline prices, and that the LCFS is not a major driver of overall retail fuel prices in California."

The LCFS is a critically important program to meeting our climate goals and decarbonizing our economy. We believe our comments provide the best and most scientific approach to stabilizing the program while maximizing GHG reductions. It's unfortunate that certain groups are pushing for a swifter move away from proven solutions to less-proven technologies on a timeline that is unrealistic and will simply cost consumers more.

We would urge CARB to reject those proposals and reject the 15-day changes that simply pick technology winners and losers that will drive less GHG reductions over the next decade and discourage long-run creativity and innovation. CARB should remain grounded in the latest science and promote fairness and consistency throughout all industries to achieve our climate goals.

Thank you for your attention to this important matter. We look forward to working with CARB to advance California's climate goals in a manner that is both effective and equitable."

**Response:** The comment addresses general concerns and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R9**

2024/09/29

Maya Khosla

**R9-1:** The commenter states, "Thank you for the chance to comment on the Sept. 12th 2024 discussion with CARB. I appreciate the talks focusing on forests and wildfire, and the environmental justice questions and comments. Overall, the approach appeared to favor massive extractions with little or no carbon accounting conducted by the state or associated entities. The first speaker and ensuing discussions seem to have missed relevant discussion points.

... Regarding the first speaker: Two years ago, North et al wrote a paper supporting the removal/logging of ~80% of the forests to make them more "resistant" to climate change (fire, etc.) - i.e. massive forest extraction to supposedly save forests. The authors based the idea on "historic forest data." But the data they used in the paper left out most of the available forest data in the archives. As part of the work, they took a small subset of the archival data, showing low forest density, leaving out archival evidence of variable and higher forest density.

Several scientific papers disprove a central idea of low-density forests presented in North et al, 2022 (<https://www.yahoo.com/news/uc-researchers-omit-key-evidence-203544768>) In addition to the archives, there is an abundance of historic photographs showing variable and higher forest density.

... Coincidentally, reducing stand density to the extent being proposed would most benefit industrial-scale logging in public lands (also not mentioned). Failing to account for the carbon emissions from forest extraction would be favored by industries seeking to utilize the trees and snags for lumber, biomass energy, biofuels, and other products the state claims are "renewable" and "clean."

The public should have a chance to objectively evaluate the presentations, rather than being exposed to industrial-level forest extraction perspectives. Future meetings should provide the space for a balance of scientific findings rather than findings that suit industrial-scale logging and related removals."

**Response:** The comment addresses general concerns related to CARB's AB 32 Environmental Justice Advisory Committee Meeting held on September 12, 2024. While this comment letter was submitted to the Recirculated EIA docket the comment does not raise significant environmental issues related to the analysis in the Recirculated or Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R10**

2024/09/11

Al Muratsuchi, Assemblymember, 66th District et al.

**R10-1:** The commenter states, “The undersigned legislators thank you for your leadership in California’s continued efforts to chart a trail of effective and innovative climate change policy. We write this letter to raise concerns regarding one of CARB’s longest-standing climate programs with the hope that the Board will correct deficiencies that we fear are undermining our climate, clean air, and environmental justice goals.”

**Response:** The comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R10-2:** The commenter states, “We are concerned that the Low Carbon Fuel Standard (LCFS), as currently implemented and as envisioned by CARB staff in its proposed rule changes, overvalues the environmental benefits of fuel produced from livestock manure. This is creating nonsensical preferences for such fuels over cleaner fuels (including electric vehicles) and incentivizing the production of methane and other contaminants. Furthermore, we are concerned that the LCFS, if not corrected immediately, could perpetuate disastrous environmental justice harms on Californians living near dairies.

CARB has an opportunity right now to address deficiencies in the LCFS through its current rulemaking, however the staff proposals released in December 2023 and August 2024 only deepen subsidies and preferences for livestock gas. Originally implemented as an early action item, this far-reaching agency program is in need of an update that takes into account our expanded environmental justice commitments, air quality mandates, and the current outlook for clean energy fuels. According to CARB’s existing program and proposed plan for future implementation of the LCFS, gas derived from livestock manure gas will continue to be considered much cleaner and lower carbon than electric vehicles and electric vehicle charging infrastructure far into the future. Under the current and proposed LCFS framework, a fleet of seven trucks, five of them diesel and two of them conventional gas paired with environmental credits of livestock gas (i.e. its characterization as carbon negative) would be considered a carbon negative fleet and “cleaner” than a fleet of seven electric trucks. This does not align with the state’s clean transportation or air quality goals. Indeed, CARB has articulated that the only way to comply with federal air quality standards is to advance zero-emission transportation. Continued LCFS support for dirty combustion is thwarting fulfillment of our clean transportation mandate.

**Response:** This comment expresses an opinion on fuel produced from livestock manure as well as the effects of dairy farms on surrounding communities. For concerns related to livestock manure, please refer to Master Response 1. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA

under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R10-3:** The commenter states, “Massive subsidies for gas derived from livestock manure also create profit incentives for the production of fuel from livestock operations – in other words, manure. CARB’s current approach to evaluating the carbon intensity of this fuel fails to consider the full scope of emissions associated with the fuel production, the fundamental decision to create methane in the first place through storage in massive manure pits when other manure management techniques prevent the creation of methane in the first place, and the assumption that livestock operations, unlike any other major methane producer in the state, are free to pollute. Just as important, the overstated value assigned to this gas fails to consider the implications for the communities in the watershed and airshed of dairy and swine facilities. Big dairy facilities in California are one of the largest sources of ammonia and volatile organic compounds, and the largest source of nitrate pollution of groundwater in the region. The San Joaquin Valley zip codes where dairies dominate have percentages of people of color far above, and median incomes far below, the state’s average. The San Joaquin Valley is also the most polluted air basin for fine particles and one of the most polluted air basins for ozone in the country.”

**Response:** Please refer to Master Response 1 and Master Response 4.

**R10-4:** The commenter states, “Communities near dairies aren’t the only ones affected by the LCFS program’s preference for livestock gas. Refineries, also disproportionately located in lower-income communities of color, are taking advantage of the LCFS program to generate profits from livestock gas in their production of steam methane reformed (SMR) hydrogen. In fact, SMR fossil hydrogen paired with the purchase through the LCFS of the environmental attributes of livestock gas is considered carbon-negative, thus generating a significantly lower carbon intensity score than electrolytic hydrogen powered by wind or solar despite the significant pollution and greenhouse gas emissions generated by steam methane reformation.”

**Response:** With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R10-5:** The commenter states, “We look forward to engaging with CARB members and staff throughout the rulemaking process, and to seeing an LCFS that operates to truly decarbonize and clean up the transportation sector, improve air quality, and strengthen environmental justice.”

**Response:** The comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for

the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R11**

2024/09/30

Neste US, Inc.

Oscar Garcia, Sr. Regulatory Affairs Manager

**R11-1:** The commenter states, “Neste appreciates the opportunity to provide these comments to the California Air Resources Board (CARB) regarding the Recirculated Draft Impact Analysis (Recirculated EIA) published on August 16, 2024. These comments are in addition to the comments submitted by Neste for the 45-day regulatory package on February 20, 2024<sup>1</sup>, the April 10, 2024 LCFS Workshop<sup>2</sup> and the August 12, 2024 15-day package<sup>3</sup>, and all of our recommendations should be considered as part of this LCFS rulemaking.

Neste continues to be disappointed by the lack of public discussion on the substantial changes proposed in the August 12, 2024 15-day package that go well beyond what would be expected in a 15-day package and many are not connected to the 45-day package<sup>4</sup>. Page 2 of the Recirculated EIR acknowledges that when

“significant new information is added...” that “a lead agency must recirculate the environmental document for public review of the new information”. It is of the utmost importance that CARB pull these major changes proposed in the 15-day package to ensure adequate public discussion can occur and avoid the countless unintended consequences noted as part of the 15-day commenting period<sup>5</sup>.

**Response:** In accordance with Section 15088.5 of the State CEQA Guidelines, significant new information requiring recirculation include: 1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented; 2) A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance; 3) A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project, but the project’s proponents decline to adopt it; or 4) The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. (*Mountain Lion Coalition v. Fish and Game Com.* (1989) 214 Cal.App.3d 1043). In addition, Section 15088.5(c) states “If the revision is limited to a few chapters or portions of the EIR, the lead agency need only recirculate the chapters or portions that have been modified”. As the changes proposed within the 15-Day Package are within the scope of Section 15088.5 of the State CEQA Guidelines, recirculation of the Draft EIA was warranted. The required public noticing for the recirculation of the Draft EIA was conducted in accordance with the requirements of CEQA and therefore, allowed for adequate public review and involvement under CEQA.

**R11-2:** We are also concerned with the cost implications of the various proposals that affect renewable diesel (RD) and SAF. These cost implications may lead to higher costs for consumers and fuel supply instabilities without delivering significant environmental improvements as compared to CARB’s proposals in the 45-day regulatory package. Neste recommends that CARB reprioritize technology neutrality to ensure that California consumers

receive renewable energy at the lowest cost possible. Focusing on the renewable energy needs of nearby jurisdictions is counterproductive because climate change is a global phenomenon and any GHG emissions reductions will result in global benefits.

Neste continues to recommend the following as part of the LCFS rulemaking to protect consumer fuel prices, to continue incentivizing investments in liquid renewable fuels, and to be more aligned with the 45-day package published in December 2023:

- Reject the proposal to give CARB the discretion to not accept new RD pathway applications and stick to your policy of technology neutrality (95488(d));
- Apply an immediate CI step-down of 12% (and not the proposed 9%) in 2025 to adequately address the large credit bank and more quickly stabilize the credit prices;
  - ICF has shown that a step down of 20.25% is needed<sup>6</sup> and the credit market continues believe that more is possible;
- Start applying the CI Automatic Acceleration Mechanism (AAM) proposed by CARB in 2026 (using 2025 data) and not wait until 2027 to address overperformance in the LCFS credit market should it persist;
- Remove the additional changes to the sustainability requirements (95488.9(g)) proposed in this 15-day package and the proposed increases to LUC factors (95488.3(d)). This will only lead to higher costs and minimal benefits to the environment; and
- Eliminate the proposed 20% cap on soybean and canola oil used to produce RD and SAF (95482(i)). Such a cap is likely to increase use of fossil diesel and jet fuel as stated by CARB at the April 10th workshop<sup>7</sup>, and lead to avoidable RD and SAF price increases.”

**Response:** The EIA is not meant to address economic or financial issues associated with regulatory compliance with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comment document. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R11-3:** The commenter states, “Neste also recommends the above changes in light of the Recirculated EIR, noting on page 51 and 52 that RD and biodiesel represent the largest source of NOx and PM emissions reductions from this rulemaking. Proposals to disincentivize RD and BD could therefore have real consequences in terms of negatively impacting air quality. GHG emissions are likely to occur as well, however the analysis in this Recirculated EIR does not accurately reflect that.”



**Response:** Please refer to Master Response 2.

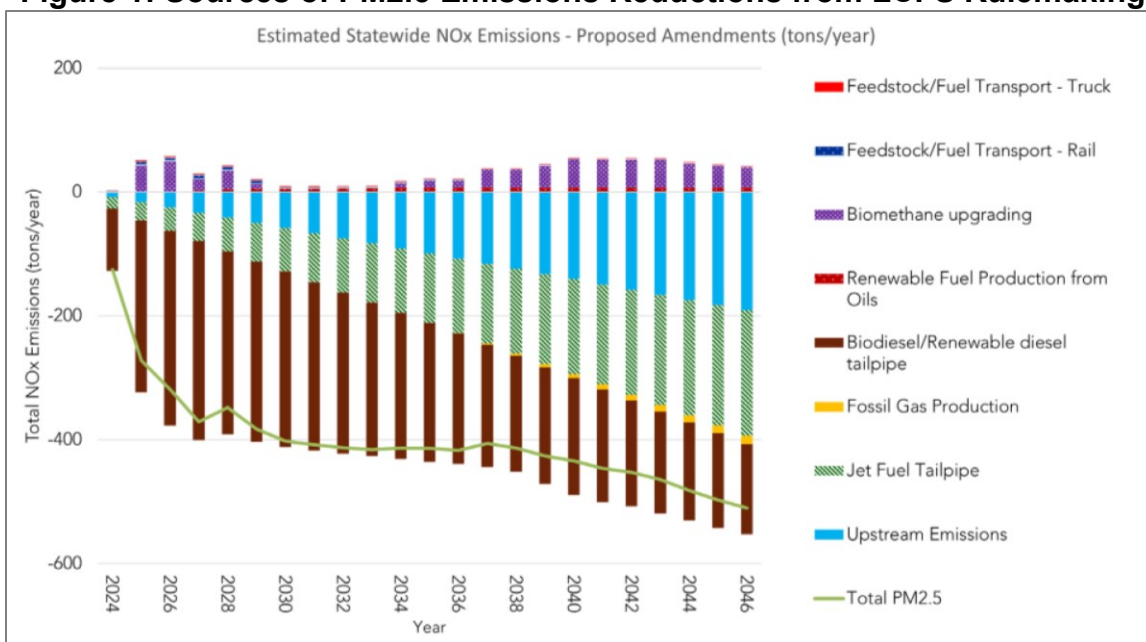
**R11-4:** The commenter states, “Below is a detailed discussion of the analysis presented in the Recirculated EIR. We urge CARB to issue another 15-day package to ensure that the problems created by this 15-day package are reversed. Neste also supports the comments from the Low Carbon Fuels Coalition (LCFC) and ICF on this rulemaking. We appreciate your consideration.

Proposed Limits on Biomass-Based Diesel Could Lead to Higher Fossil Diesel Use and Poorer Air Quality

Neste has participated in multiple CARB workshops where CARB discussed the negative implications of limiting biomass-based diesel. In CARB’s April 10th LCFS Workshop, CARB noted in its presentation that any limits on biomass-based diesel would be backfilled by fossil diesel (see slide 21)<sup>8</sup>. In fact, CARB stated that 60% of fossil diesel has been displaced by biomass-based diesel in 2023, resulting in PM and NO<sub>x</sub> benefits (see slide 12). It is clear that any limits or reductions in biomass-based diesel could lead to higher air pollutant emissions, and overall higher health impacts in California.

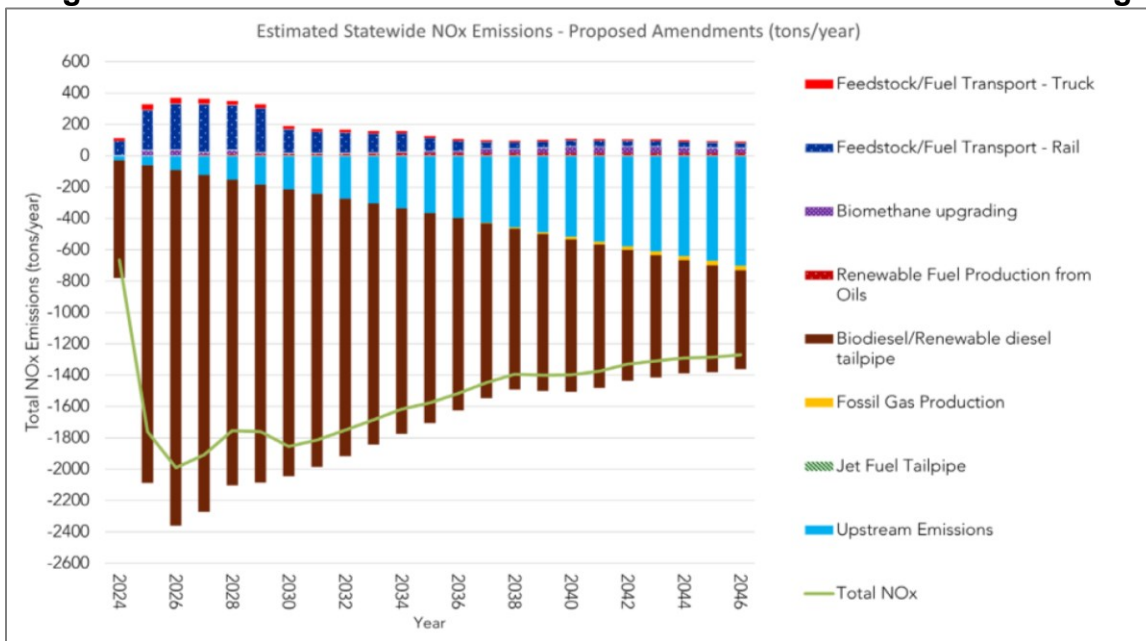
As part of the recirculated draft EIR for the LCFS rulemaking, the air quality impacts analysis conducted by CARB highlights that biomass-based diesel use represents a large majority of the NO<sub>x</sub> and PM reductions from this rulemaking. Figure 1 below shows the RD and biodiesel tailpipe emission reductions represent approximately 50% of PM<sub>2.5</sub> reductions from this rulemaking (see page 52 of the recirculated EIR)<sup>9</sup>.

**Figure 1: Sources of PM<sub>2.5</sub> Emissions Reductions from LCFS Rulemaking**



Similarity, CARB's analysis of NOx reductions on page 51 shows that RD and biodiesel tailpipe emissions reductions represent approximately 78% of the reductions achieved by this rulemaking (see Table 2 below)<sup>10</sup>.

**Figure 2: Sources of NOx Emissions Reductions from LCFS Rulemaking**



In summary, RD and biodiesel use represent a significant majority of the air quality benefits achieved by the LCFS, and any reductions in their use could lead to negative air quality impacts.”

**Response:** Please refer to Master Response 2.

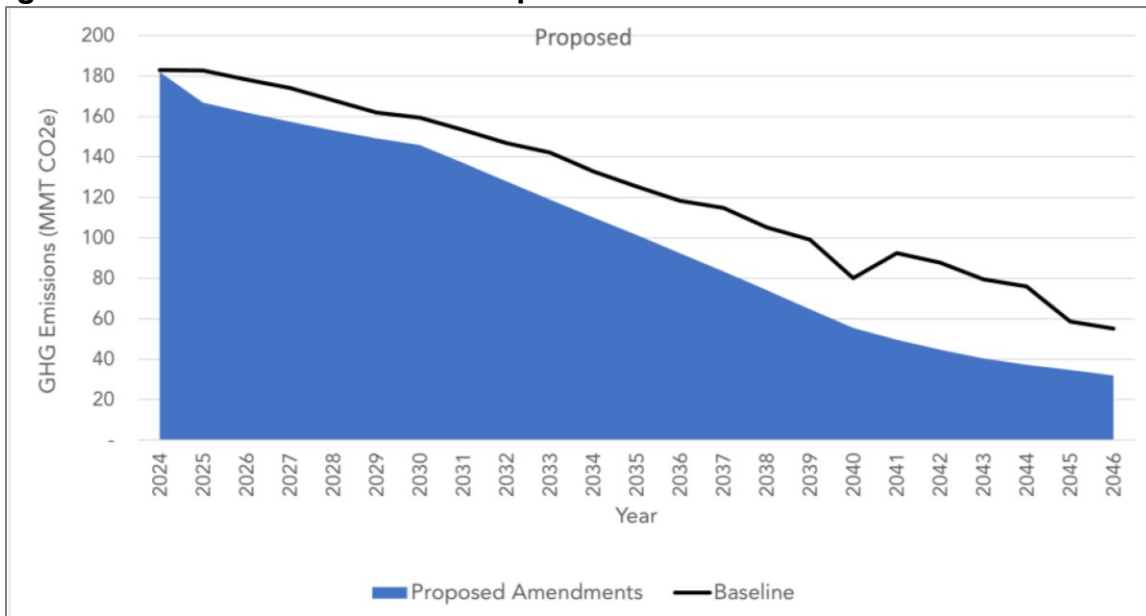
**R11-4:** The commenter states, “GHG Emissions Modeled for 15-day Package Not Consistent with CARB Own Analysis in 45-day Package”

As part CARB’s April 10th LCFS Workshop, CARB modeled the “EJAC Scenario” that included a cap on biomass-based diesel production (see slide 31)<sup>11</sup>. CARB found that it resulted in an increase of 386 MMT CO<sub>2</sub> and \$85 net cost increased in costs to the state. Just four months later as part of the 15-day package, CARB has found that GHG emissions will decrease even with a cap and various limitations on biomass-based diesel. Figure 3 below from page 60 from the circulated EIR shows that somehow GHG emissions will decrease even with the possibility of higher fossil diesel use that is likely to occur from the constraints put on biomass-diesel in the August 2024 15-day package.

Neste reviewed the data used to generate Figure 3 below, and it appears as though CARB attributed several GHG reductions early into the Proposed Amendments that have no explanation<sup>12</sup>. Examples include lower than expected fossil fuel use in 2024-2026, making the GHG emissions artificially low early into the Proposed Scenario. As noted in our comment

letter for the August 2024 15-day package, CARB is modeling the Proposed Scenario assuming an artificially low fossil diesel volume that is simply not possible (see page 7 of the comment letter)<sup>13</sup>. This resulted in the Proposed Amendments appearing as more effective than the Baseline, even though CARB's own analysis back in just April 2024 would suggest otherwise.

**Figure 3: GHG Emissions from Proposed LCFS Amendments and the Baseline**



**Response:** Staff calculated the GHG reductions based on outputs from the CATS model, which optimizes the fuel mixture entering the market to balance fuel supply and demand that result in meeting the annual carbon intensity target. The reduction in GHG emissions in the proposed amendments for the Recirculated EIR reflect the following primary differences from the EJAC scenario of the ISOR that was released in April 2024:

1. The EJAC scenario reflected the EJAC's recommendation to end all avoided methane crediting for biomethane in 2025, which led to much fewer GHG reductions as compared to the proposed amendment.
2. The 15-day scenario includes a 9 percent step-down in 2025, as compared to the EJAC scenario which had a 5 percent step-down in 2025, leading to comparatively fewer near-term GHG reductions.
3. The EJAC scenario included a restriction of all lipid biofuels from entering the market in excess of 2020 volumes (558 million gallons), whereas the proposed amendments do not limit the biofuel volumes entering the market – it limits the credits that can be generated by soybean, canola, and sunflower oil-based biobased diesel (BBD) fuels, but allows additional waste-based volumes as well as additional soy, canola, and sunflower quantities to enter at the benchmark CI value or pathway value, whichever

is higher (please refer to Master Response 2). The EJAC restriction resulted in higher credit demand within the CATS model than the available low carbon fuels could provide, leading to increased diesel usage and drawdown of bank credits and advanced credits. This resulted in fewer GHG reductions as compared to the proposed amendments.

Under the 15-day proposed amendments, waste-based BBD can continue earning credits and companies may also choose to deploy soybean, canola, and sunflower oil-based BBD in excess of the 20 percent limit to minimize costs associated with fossil diesel. It is therefore reasonable to expect increasing volumes of BBD will enter the market so long as CARB sets CI targets that are ambitious enough to create demand. The CATS model shows BBD growth reaching over 3 billion gallons given the proposed amendments. Projected volumes from CATS outputs are likely to occur given BBD's average annual growth of 38 percent in the last three years, the fact that 2023 volumes entering the LCFS market were over 2.2 billion gallons, and national refinery conversions including California refinery conversions in 2024 that alone added over 750 million gallons of renewable diesel production.<sup>22</sup>

4. Following the ISOR, staff updated renewable diesel supply curves based on stakeholder comments to better reflect market data and calibrate supply to volumes already entering the market in 2023, which resulted in an increase of renewable diesel supply within the modeling. This change led the average annual BBD entering the market under the proposed amendments to increase from 925 million gallons to 2,569 million gallons (only 300 million gallons more than entered the market in 2023). The proposed amendments analysis shown in April reflected this change. While this didn't result in greater net GHG reductions (because the baseline scenario also reflected increased BBD use), it created additional low-cost credits to meet the annual CI targets.

**R11-6:** The commenter states, "EIR Contains Conflicting Statements Supporting Need for RD/BD/SAF growth but also Noting that RD/BD will be Constrained in the 15-day Package"

In the Recirculated EIR, CARB notes that this rulemaking is needed to further strengthen renewable energy growth, even for biomass-based diesel and SAF. Below are examples of statements made in the Recirculated EIR, and Neste agrees that these should be the priorities of this rulemaking.

- Staff is proposing to strengthen the pre-2030 CI benchmarks and create post-2030 CI benchmarks to signal long-term support for LCFS, which will help signal a strong LCFS

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<sup>22</sup> Phillips 66, Phillips 66 Achieves Full Production Rates of Renewable Fuel, 2024.  
<https://investor.phillips66.com/financial-information/news-releases/news-release-details/2024/Phillips-66-Achieves-Full-Production-Rates-of-Renewable-Fuel/default.aspx#:~:text=The%20Rodeo%20facility%20in%20the,the%20second%20quarter%20of%202024.>

market for the more infrastructure-heavy investment needed (e.g., refinery conversions and CCS). [page 9]

- This may include construction and operation of new facilities to produce renewable diesel, biodiesel, and AJF and collection and distribution of feedstocks to supply these facilities, or replace existing petroleum refineries. [page 23]
- The proposed amendments would likely also increase demand for biomass-based diesel and alternative jet fuel. [page 36]
- However, announced production capacity for renewable diesel and alternative jet fuel (AJF) in California has increased substantially in recent years, and it is likely that an increasing proportion of the renewable diesel and AJF demanded in future years of the program would be met by California sources. As a result, existing facilities could be expanded to accommodate general increases in production of these fuels. Additionally, new facilities could be constructed to accommodate the increased production of these fuels. [page 36]

However, the Recirculated EIR states that CARB is proposing several changes to the regulation that are counter to the stated goals above, and has thus far has not provided any technical justification for these last minute proposals. Below are examples of limits to biomass-based diesel that CARB is proposing, and Neste opposes all these proposals:

- Staff is proposing to stop accepting applications for new biomass-based diesel fuel pathway applications starting on January 1, 2031, contingent on successful implementation of California's medium- and heavy-duty (MHD) zero emission vehicle regulations. [page 15]
- In addition, staff is proposing to provide credits for biomass-based diesel produced from virgin soybean oil and canola oil for up to 20 percent of annual biomass-based diesel reported on a company-wide basis. [page 15]
- The proposed addition also avoids sending a long-term signal for virgin soy or canola oil to serve California demand. [page 15]
- However, the proposed regulation is not expected to result in significant increases in soy and canola feedstock utilization for biomass-based diesel, given that volumes in excess of 20 percent, which matches 2023 feedstock composition levels across all pathways, will not be eligible for crediting. [page 35]"

**Response:** Please refer to Master Response 2.

**R11-7:** The commenter states, "Thank you for considering our comments and we look forward to continue working with CARB on this rulemaking."

**Response:** The comment is conclusory in nature and does not require any response or further consideration.

**Comment Letter R12**

2024/09/10

People's Collective for Environmental Justice, Andrea Vidaurre, Co-Founder & Policy Coordinator et al.

**R12-1:** The commenter states, "For the past three years, the undersigned public interest organizations have advocated to reform the Low Carbon Fuel Standard (LCFS) so that it propels California's progress in the fight against the climate and air pollution crises while delivering economic and environmental justice.

Unfortunately, California Air Resources Board (CARB) Staff's 15-Day Change Proposal fails to address our grave concerns about the LCFS's lopsided support for combustion fuels that are harming California communities, threatening sensitive ecosystems, exacerbating global hunger, and worsening our climate crisis. Rather than restricting bogus credits, the proposal focuses entirely on increasing credit demand. If key changes are not made, the LCFS would remain a regressive, outdated, and combustion-focused program, prioritizing the demands of powerful fossil fuel and agribusiness industries over public health and environmental integrity.

There is still time to fix these problems and align the LCFS with environmental justice and climate integrity. We urge you to vote NO on November 8th unless the following deficiencies are addressed:"

**Response:** The comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R12-2:** The commenter states, "● Failure to eliminate distortionary avoided methane crediting. Despite repeated and vehement concern from public health, environmental justice, environmental organizations, academic experts—and above all, low-income Californians of color—the 15-Day Change Proposal fails to end the LCFS's exceptional treatment of livestock methane pollution as a lucrative offset. Nothing about livestock methane's chemistry makes it better than landfill or wastewater methane at fighting climate change. These inflated credits are premised entirely on CARB's refusal to use its clear authority to regulate livestock methane like any other major pollution source. The 15-day Change Proposal not only maintains this treatment, it further extends the lavish subsidies relative to the timeline proposed in the September 2023 Standardized Regulatory Impact Assessment (SRIA). This extension runs counter to the direction provided by several Board Members in September, who expressed concern about the value and longevity of avoided methane crediting proposed in the more conservative SRIA.

**In subsequent 15-day changes, CARB should eliminate avoided methane crediting for all new pathway applications and align accounting with landfill/wastewater methane."**

**Response:** With regard to the environmental impacts raised by the comment, please refer to Master Response 1. The remainder of this comment addresses general concerns around avoided methane crediting that are not environmental impacts related to the analysis in the Recirculated Draft EIA. No further written response is required under CARB's certified regulatory program.

**R12-3:** The commenter states, "Crediting for fossil fuel-based hydrogen through the book-and-claim of unbundled biomethane. Staff's stated restriction on credits for fossil fuel-derived hydrogen is misleading. The restriction still allows fossil-gas derived hydrogen to generate lavish credits so long as producers purchase unbundled environmental biomethane attributes. This bogus credit generation increases revenue for dirty hydrogen producers and factory farms near California's most pollution-burdened communities and undercuts the incentive to invest in genuinely green hydrogen production."

**In subsequent 15-day changes, CARB should eliminate this loophole for fossil hydrogen and end avoided methane crediting."**

**Response:** The comment addresses general concerns related to credit restrictions and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R12-4:** The commenter states, "Failure to impose adequate limits on volumes of crop biofuels is driving deforestation and global hunger. CARB's own modeling in the 15-day Change Proposal projects volumes of renewable diesel will be 50% higher than those projected in Staff's Initial Statement of Reasons (ISOR). These higher projections come despite the addition of the newly proposed 20% -per-producer limit and the additional authority to consider future adjustments to land use change values. Accordingly, by CARB's own data, the newly proposed measures—while well-intentioned—will not prevent or even mitigate the LCFS's role in driving deforestation and rising global food prices. Moreover, increased production volumes of renewable diesel will extend the pollution burden of refining in fence-line refinery communities across California."

**In subsequent 15-day changes, CARB should impose a volume limit on lipid biofuels. At a minimum, CARB should strengthen the current proposal to cover all lipid biofuel feedstocks, and treat all overages as ultra-low sulfur diesel."**

**Response:** Please refer to Master Response 2.

**R12-5:** The commenter states, "Abandonment of the provision to include fossil jet fuel as a deficit generator. Airport workers were assured in the rulemaking process that CARB would attempt to leverage the LCFS to tackle pollution from jet fuel. But by excluding fossil jet fuel from generating deficits, there is little incentive for airlines to invest in cleaner fuels, or support higher credit prices that accelerate zero-emissions investments in cargo handling or airport



ground support equipment. CARB's backsliding on this key reform reduces the effectiveness of the LCFS and stalls progress on the challenge of reducing pollution from jet fuel, all while absolving the profitable airline industry—a transportation segment catering primarily to more affluent consumers—of paying its fair share.

**In subsequent 15-day changes, CARB should ensure all major polluters are covered under the LCFS and restore intra-state fossil jet fuel as a deficit generator."**

**Response:** The comment addresses general concerns related to the airline industry and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R12-6:** The commenter states, "Diversion of credits from utilities to original equipment manufacturers (OEMs). In a step backwards, the 15-Day Change Proposal reallocates up to 45% of credits from utilities that are beholden to laws and standards in service of the public interest to subsidize OEMs. The proposed changes do not include any parameters or guardrails to address the inequitable distribution of zero-emission vehicles (ZEVs) in California, nor any requirements that deployments be "additional" to existing requirements. Such alterations may perversely incentivize OEMs to miss regulatory targets, while siphoning much-needed investments away from medium- and heavy-duty electrification that would have been surplus of required deployments. Siphoning funds from accelerating medium-and heavy-duty electrification towards mere compliance for light-duty electrification will reduce desperately needed air quality benefits for freight communities while perpetuating historic barriers to electric vehicle access for low-income communities of color.

**In subsequent 15-day changes, CARB should limit ZEV subsidies to low-income communities and prioritize electrification funding for medium- and heavy-duty vehicles and grid upgrades that lower air pollution and ratepayer costs."**

**Response:** The comment addresses general concerns related to zero emission vehicles and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R12-7:** The commenter states, "CARB must address these fundamental problems with the 15-Day Change Proposal to make the LCFS more equitable, less reliant on outdated combustion fuels, and to align the program with CARB's own air quality standards and ZEV goals. The above changes are also necessary to ensure the program reflects the best available climate science and centers the voices of the communities and workers at the frontlines of the energy transition.

We urge Board Members to direct Staff to make these critical changes to the LCFS and to vote NO on the proposed amendments unless these changes are incorporated into the final proposed rule. We look forward to working with you to craft a stronger, more equitable LCFS.”

**Response:** The comment addresses general concerns and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R13**

2024/09/30

Western States Petroleum Association

Sophie Ellinghouse. Vice President, General Counsel & Corporate Secretary

**R13-1:** The commenter states, “The Western States Petroleum Association (WSPA) appreciates the opportunity to comment on the California Air Resources Board’s (CARB) Recirculated Draft Environmental Impact Analysis (EIA) for the proposed Low Carbon Fuel Standard (LCFS) program amendments. WSPA agrees with CARB that recirculation of the EIA is necessary here, because the changes to CARB’s preferred scenario are significant, but is concerned that the EIA remains insufficient [Footnote: See CEQA Guidelines Section 15088.0].

WSPA is a non-profit trade association representing companies that import and export, produce, refine, transport, and market petroleum, petroleum products, alternative fuels, natural gas, and other energy supplies in California and four other western states, and has been an active participant in air quality planning issues for over 30 years. WSPA is proud of the technological advancements our member companies have made in bringing more alternative fuels and electricity to California’s transportation market since the LCFS came into effect. We believe a well-designed LCFS program with clear objectives is essential to supporting a healthy lower carbon fuels market, including renewable fuels. It remains essential for CARB to finalize revisions that align with statutory requirements, are implementable, and achievable to continue this success.”

**Response:** The comment states that while the Recirculated EIA meets the criteria of Section 15088.5 of the CEQA Guidelines, the Recirculated EIA remains insufficient. As the comment does not specifically state how the Recirculated EIA is insufficient, it would be speculative to assume the manner in which the commenter views the Recirculated EIA to be insufficient. Therefore, a more detailed response is not possible at this time and no changes to the Draft EIA are warranted based on the comment. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R13-2:** The commenter states, “CARB’s Recirculated Draft EIA fails to fully address the Agency’s obligations under the California Environmental Quality Act (CEQA) for the following reasons: (1) CARB’s changes to its preferred scenario are being proposed too late in the environmental review process; (2) CARB’s Recirculated Draft EIA fails to evaluate a reasonable range of alternatives by failing to consider alternatives that include more feasible near-term carbon intensity (CI) reduction targets and fewer restrictions for biofuels; and (3) CARB’s Recirculated Draft EIA fails to consider potentially significant indirect impacts associated with proposed limits on crop-based feedstock and increased development of renewable electricity sources.”

**Response:** With regard to the alternatives considered in the EIA, refer to the response to comment R16-8. With regard to the commenter’s third point about the proposed limits on crop-based feedstock and increased development of renewable electricity sources, please refer to

Master Response 2. The remainder of this comment is conclusory or introductory in nature and does not provide an environmental impact which requires a response. Please see the following responses for individual responses to these topics.

**R13-3: The commenter states, “CARB’s Recirculated Draft EIA includes significant program revisions evaluated too late in the environmental review process.”**

CARB is proposing significant changes to its preferred regulatory scenario too late in the review process, undermining the efficacy of CEQA’s EIA requirement. In its original Draft EIA, released in January 2024, CARB proposed interim CI reduction targets of 18.75% in 2025 and 21.0% in 2026, based on lowering the 2030 reduction target from 20% to 30%.<sup>2</sup> However, in its Recirculated Draft EIA, developed just prior to CARB’s November 8, 2024, hearing date, CARB updated its preferred scenario to include interim CI reduction targets of 22.7% in 2025 and 24.2% in 2026.<sup>3</sup> CARB’s Draft EIA demonstrates that increasing the stringency of reduction targets significantly alters the analysis of associated environmental impacts. For example, in discussing Alternative 4 (based on a more stringent 40% reduction target in 2030), CARB determined that this scenario “would result in an increase of the compliance responses associated with the Proposed Amendments and in turn would result in an increase in the environmental impacts.”<sup>4</sup> For this reason, CARB rejected Alternative 4 without additional analysis.<sup>5</sup> Similarly, CARB’s last-minute adjustment to the interim reduction targets will significantly impact compliance scenarios. As WSPA explained in its comment letter submitted on August 27, 2024, CARB’s most recent proposal to increase the 2025 CI target by a 5% near-term “step down” would effectively mandate that industry achieve approximately eight years’ worth of progress (as measured under the current program) in a single year. Achieving these more stringent targets will therefore involve inherently different environmental impacts that CARB has provided only limited analysis on very late in the regulatory process.

As the Supreme Court has emphasized, “the [EIA] is the ‘heart of CEQA.’ ... Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made.” (*Laurel Heights Improvement Assn v. Regents of University of California* (1993) 6 Cal.4th 1112, 1123.) For this reason, it is essential that an Environmental Analysis is “prepared as early in the planning process as possible to enable environmental considerations to influence project, program or design.” (See *Laurel Heights Improvement Assn. v. Regents of Univ. of California*, 47 Cal. 3d 376, 395 (1988), as modified on denial of *reh’g* (Jan. 26, 1989).) Agencies must avoid the kind of “bureaucratic and financial momentum” that provides “a strong incentive to ignore environmental concerns.” *Id.* “[T]he later the environmental review process begins, the more bureaucratic and financial momentum there is behind a proposed project. . . .” *Id.*

CARB’s Recirculated Draft EIA exemplifies this kind of momentum, adopting a preferred scenario with potentially significant environmental impacts beyond those originally proposed, just in advance of a hearing to adopt these changes.”

**Response:** CARB incorporated minor revisions the project description in the Recirculated Draft EIA for clarity and consistency with the proposed 15-day changes. One of those

proposed changes was adjusting the proposed interim CI reduction target to 9% in the near-term for 2025 from the 5% year-to-year increase included in the initial amendment proposal. (Notice of 15-day Changes, p. 5.) Staff proposed this adjustment to smooth the curve between the more ambitious 2025 compliance target and the originally-proposed 30% reduction in 2030, which remains the same in the updated proposal. (Id.) Staff expect compliance responses and findings of significance to the adjusted CI reduction targets to stay the same because updated biofuel feedstock supply curves, which staff adjusted to better reflect current market trend data, show increased volumes of renewable diesel entering the market within the CATS model analysis, and generating greater credits. This change suggests that current market economics can support more ambitious carbon intensity targets, following the same compliance responses, at lower prices per metric ton CO<sub>2</sub>e than in the original proposal. For that reason, the reasonably foreseeable environmental impacts of the updated proposal are already encompassed in the Draft EIA. Commenter concludes the updated CI benchmark amendments would lead to different environmental impacts, but neither identified any environmental impact that would be different nor any changes to the significance conclusions from those identified in the Draft EIA.

In addition, Alternative 4 substantially differs and is not appropriate to compare to the proposed CI reduction targets in the Recirculated Draft EIA. First, Alternative 4 proposed a CI reduction target of 40% in 2030, which is 10% higher than the Proposed Amendments. Second, Alternative 4 also proposed removing several project amendments that limit or phase out credit generating opportunities that could pose environmental impacts. (See Draft EIA, p. 179.) In addition to increasing the stringency of the CI reduction target to 40% in 2030, Alternative 4 would also remove crop-based biofuels sustainability criteria, and not include any phase out of avoided methane crediting, or deliverability requirements for book-and-claim of biomethane generated outside of California.

**R13-4:** The commenter states, “**CARB’s Recirculated Draft EIA fails to cure deficiencies in its Draft EIA by unreasonably excluding alternatives capable of reducing environmental impacts.**”

CEQA requires CARB to assess “a reasonable range of alternatives to the proposed project, which could feasibly attain most of the project objectives but could avoid or substantially lessen any of the identified significant impacts.” (Cal. Code Regs., tit. 17, § 60004.2). CEQA Guidelines further specify that, in developing regulatory alternatives, agencies must consider alternatives “which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives.” Cal. Code Regs., tit. 14, § 15126.6(b).

CARB developed only a limited range of regulatory alternatives in its original Draft EIA, including:

- Alternative 1, a no project alternative where the current LCFS program would continue unchanged;

- Alternative 2, a focused crediting scenario that would limit credit generation opportunities for methane and direct air capture; and
- Alternative 3, a less stringent reduction scenario with a revised 2030 CI reduction target of 25%.<sup>6</sup>

According to CARB, these alternatives “allow the public and Board to consider different approaches” based on “potentially feasible project alternatives.”<sup>7</sup> However, none of these alternatives evaluate feasible compliance options that could mitigate environmental impacts associated with the proposed LCFS program revisions, including:

- Less stringent near-term reduction targets; and
- Additional credit generation opportunities for biofuels.”

**Response:** Please refer to response to comment R16-8. Additionally, Alternative 3 is a compliance option that includes “less stringent near-term reduction targets.”

**R13-5:** The commenter states, “**Less stringent near-term reduction targets:** As CARB explained in its discussion of Alternative 3, decreasing the rate of deployment of lower-carbon intensity fuels would reduce “near-term construction-related emissions due to the slower buildout of new fuel production infrastructure.”<sup>8</sup> By strengthening the CI reduction targets in 2030 and beyond, while still providing additional compliance flexibility in the next 2-3 years, CARB could achieve the greater emissions benefits associated with its preferred scenario in the long-term, without incurring additional near-term environmental impacts associated with increased compliance responses. This scenario would meet most of the objectives of the Proposed Amendments, similar to Alternative 4, while reducing construction-related emissions, similar to Alternative 3. Therefore, pursuant to the CEQA Guidelines, CARB is required to consider less stringent near-term reduction targets. See Cal. Code Regs., tit. 14, § 15126.6(b). CARB’s Recirculated Draft EIA does not address this deficiency, but rather increases near-term reduction targets without evaluating any additional alternatives.”

**Response:** Please refer to response to comment R16-8. In addition, Alternative 3 achieves fewer emissions benefits than the Proposed Amendments.

**R13-6:** The commenter states, “**Additional credit generation opportunities for biofuels:** In its evaluation of Alternative 2, CARB concluded that limiting credits for effective emission reduction projects like direct air capture “would reduce one of the key incentives to deploy this technology and jeopardizes the feasibility of achieving California’s long-term decarbonization targets and the 2045 carbon intensity target proposed under this project.”<sup>9</sup> Similarly, CARB emphasized that “[t]he more stringent deliverability requirements for out-of-state biomethane and elimination of avoided methane credits could limit the diversification of the state’s fuel portfolio and the use of increasingly lower-CI transportation fuels (objective 1), increase the State’s dependence on fossil fuels (objective 5), and reduce investments in alternative fuel production and fueling infrastructure (objective 3).”<sup>10</sup>

These concerns are equally important for biofuel credit generation opportunities. As WSPA has explained in prior comment letters, ethanol has been used in California for decades and is a critical renewable fuel with lower carbon intensity. Ethanol has limited-to-no substitutes to achieve today's CI reductions in California and is therefore an important component of the State's efforts to reduce greenhouse gas emissions from gasoline. CARB's proposed feedstock limitations in its preferred scenario would increase the risk of a supply shortage for ethanol and would run counter to CARB's ongoing efforts to evaluate potential future approval of E15 blends. Meeting these requirements would significantly increase the cost and burden of ethanol, thus disincentivizing ethanol development and limiting the diversification of California's fuel portfolio, counter to Objective 1. These more stringent requirements would also increase indirect environmental impacts through higher emissions of PM and several other pollutants as a result of lower ethanol blending.

Despite these concerns, CARB failed to analyze an alternative with more flexible credit generation opportunities for biofuels, instead considering only the more restrictive requirements in the Agency's preferred scenario and a baseline scenario that would maintain existing requirements for biofuel credit generation. However, increasing credit generation opportunities for biofuels would address these concerns and help achieve the project objectives compared to the baseline scenario, while limiting indirect environmental impacts associated with the Proposed Amendments. Pursuant to the CEQA Guidelines, CARB is therefore required to consider this alternative. See Cal. Code Regs., tit. 14, § 15126.6(b)."

**Response:** CARB considered a reasonable range of alternatives to the Proposed Amendments. Please refer to response to comment R16-8. Please also refer to Response to Comment 180-1 regarding E15.

**R13-7:** The commenter states, "**CARB's updated impacts analysis in its Recirculated Draft EIA fails to adequately evaluate potentially significant environmental impacts.**"

CEQA requires CARB to assess regulatory alternatives in light of their indirect and cumulative impacts (Cal. Code Regs., tit. 14, § 15130). One of CEQA's primary concerns is with "human health and safety." See Cal. Building Indus. Ass'n v. Bay Area Air Quality Mgmt. Dist., 62 Cal. 4th 369, 386 (2015); Cal. Pub. Res. Code § 21083(b)(3). An agency's environmental analysis must contain "[a] discussion and consideration of environmental impacts, adverse or beneficial, and feasible mitigation measures which could minimize significant adverse impacts identified," as well as "[a] discussion of cumulative and growth-inducing impacts." 17 CCR § 60004.2(a).

CARB failed to adequately consider the following potentially significant environmental impacts associated with the Proposed Amendments:

- Indirect emissions increases associated with reduced ethanol supply, based on proposed requirements that would penalize uncertified ethanol or imposing significant certification costs on the ethanol supply chain; and

- Indirect land-use impacts associated with increased development of renewable electricity sources (specifically solar), based on proposed credit restrictions on hydrogen produced using fossil natural gas as a feedstock.
- Indirect impacts associated with increased demand on the electric grid due to significantly increased zero-emission vehicle (ZEV) use, requiring additional increases in electric utility construction.”

**Response:** CARB does not expect ethanol supply to decrease as a result of the proposed sustainability requirements, and demonstrated no reduction in ethanol consumption in California in the modeling supporting the 1<sup>st</sup> 15-day change to the Proposed Amendments. The sustainability requirements were designed with a tiered implementation schedule that provides ample time to comply with the requirements, and the most time to demonstrate full sustainability certification. With regard to the potential indirect impacts proposed by the commenter, please refer to response to comment R16-5.

**R13-8:** The commenter states, “**Indirect emissions increases due to reduced ethanol supply:** The Proposed Amendments would impose “sustainability guard rails” that may limit the supply of crop-based feedstocks used in the production of biofuels. As part of these guardrails, the feedstock supply chain would be required to comply with a resource-intensive, duplicative third-party process to ensure that crop-based and forestry-based feedstocks are not sourced on land that was forested after January 1, 2008. This process would increase costs associated with biofuel production and create an unnecessary burden for transportation fuel producers that may impact the availability of alternative transportation fuels.

At minimum, these requirements would likely disincentivize the continued blending of ethanol into California fuel and instead an alternative oxygenate may be used for which the emissions impacts are unknown. As a result, these requirements have the potential to significantly increase indirect GHG emissions and criteria pollutant emissions by increasing the carbon intensity of gasoline through less ethanol blending or increasing reliance on gasoline by limiting the availability of alternative transportation fuels. The Recirculated Draft EIA concludes that “deployment of alternative fuels will also reduce criteria pollutants and toxics relative to continued use of fossil fuels like gasoline, diesel and fossil jet fuel,” and that “[b]iomass-based diesel use attributed to the LCFS as part of the Proposed Amendments could result in an overall potential decrease in long-term operational NO<sub>x</sub> and PM emissions relative to use of conventional diesel in all state-designated and federally designated ozone non-attainment areas from 2024 through 2046.”<sup>11</sup> However, this analysis fails to account for potential supply limitations of these fuels based on burdens for feedstock supply.”

**Response:** Please refer to response to comment R13-7.

**R13-9:** The commenter states, “**Indirect land-use changes due to increased reliance on renewable electricity sources:** The Proposed Amendments would effectively ban LCFS crediting for hydrogen produced using fossil natural gas as a feedstock and assign any volumes of such hydrogen the default ULSD CI, starting in 2031. As CARB signaled in its 2022



Scoping Plan Update, hydrogen will play a critical role in achieving California’s ambitious goal of achieving carbon neutrality by 2045. However, CARB’s proposed updates would favor electrolysis using renewables, which encourages the increased development of renewable electricity sources (specifically solar). These renewable electricity sources have higher land-use requirements that would result in the conversion of agricultural lands. CARB’s Recirculated Draft EIA fails to account for these potentially significant land-use impacts.”

**Response:** Please refer to response to comment R13-7.

**R13-10:** The commenter states, “**Indirect impacts due to increased electricity demand:** The Proposed Amendments strongly endorse increased ZEV use by (1) allowing a significant portion of base credits to be assigned to OEMS if the share of certified ZEV sales for MY 2024 is less than 30%—creating a strong incentive to exceed this threshold in order to preserve flexibility for base credits—and (2) proposing to stop accepting applications for new biomass-based diesel fuel pathway applications in 2031, based on successful implementation of certain ZEV regulations—limiting options for lower carbon fuel alternatives. Increased ZEV use will generate increased demand on the electric grid, which will require additional increases in electric utility construction to meet this demand. This additional construction will likely include gas units to make up for the intermittency of renewable resources such as wind and solar. The construction of these facilities, as well as the use of additional gas facilities to meet demand, will have environmental impacts, including impacts on biological resources and increased greenhouse gas emissions and criteria pollutants.”

**Response:** Please refer to response to comment R13-7.

**R13-11:** The commenter states, “WSPA appreciates the opportunity to provide these comments.”

**Response:** The comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R14**

2024/09/30

Orran Balagopalan

Leadership Counsel for Justice and Accountability

**R14-1:** The commenter states, “This firm represents Leadership Counsel for Justice and Accountability (“Leadership Counsel”) in matters relating to the California Air Resources Board’s (“CARB”) Proposed Amendments to the Low Carbon Fuel Standard Regulation (“Proposed Amendments” or “Project”). Central Valley Defenders of Clean Water & Air, Animal Legal Defense Fund (“ALDF”), and Food & Water Watch (“FWW”) have informed us that they also join in this letter. Leadership Counsel previously submitted comments in response to CARB’s release of the Draft Environmental Impact Analysis (“DEIA”)<sup>1</sup> and the additional modifications to the Proposed Amendments<sup>2</sup>. CARB’s adoption of the Proposed Amendments is subject to the California Environmental Quality Act (“CEQA”).<sup>3</sup>”

**Response:** The comment provides an introduction to the subsequent comments provided below. This comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R14-2:** The commenter states, “CEQA requires CARB to acknowledge the obvious—that providing substantial financial benefits for the production of fuel derived from manure at concentrated animal feeding operations (“factory farms”) incentivizes the expansion of herds. Voluminous data demonstrates that expansion of herds is a reasonably foreseeable compliance response to the Proposed Amendments, no different than the installation of anaerobic digesters, increased production of fuel derived from factory farm manure, or the myriad other reasonably foreseeable compliance responses CARB acknowledges. CARB’s position—that herds began expanding before LCFS crediting and the LCFS had no impact on the rate of expansion—is belied by the data. The Recirculated DEIA fails entirely to provide substantial evidence to support its position, relying on irrelevant and faulty national and statewide data that do not come close to showing the absence of a link between the Proposed Amendments and herd expansions. CEQA requires CARB to not only acknowledge that herd expansion is a reasonable foreseeable response to the Proposed Amendments, but also adequately analyze the severe environmental impacts associated with herd expansion. CARB’s failure to do either is clear legal error.

The Recirculated DEIA does not even attempt to remedy the numerous other flaws pointed out by Leadership Counsel. Despite acknowledging that the installation of anaerobic digesters is a reasonably foreseeable response to the Proposed Amendments, the DEIA and Recirculated DEIA failed to adequately analyze the impacts associated with digesters and digestate. The DEIA and the Recirculated DEIA adopt no enforceable mitigation measures, despite concluding the Proposed Amendments will have numerous significant environmental impacts. Neither the DEIA or Recirculated DEIA include a discussion of an alternative where CARB exercises its authority to engage in direct regulation of methane emissions sources, instead of

simply relying on the LCFS's indirect, incentive-based regulation. The DEIA must be recirculated once again to remedy these errors, each of which is sufficient on its own to invalidate any forthcoming approval of the Proposed Amendments.”

**Response:** The comment provides an introduction to the subsequent comments provided below. Please refer to responses to comments R14-3 – R14-12.

**R14-3:** The commenter states, “**I. The additional modifications to the Proposed Amendments do not eliminate, and would likely increase, the incentive for factory farms to expand their herds and install anaerobic digesters.**”

In comments on the DEIA, Leadership Counsel explained why the Proposed Amendments would greatly increase the incentive that already exists under the LCFS for factory farm herd expansion and digester installation.<sup>4</sup> On August 12, 2024, CARB released additional modifications to the Proposed Amendments.<sup>5</sup> In response, Leadership Counsel submitted comments emphasizing that the additional modifications would only further increase the incentive for factory farms to expand their herds and install anaerobic digesters.<sup>6</sup> For example, the additional modifications include even more stringent carbon intensity benchmarks<sup>7</sup> than the original Proposed Amendments, which will increase the price of credits for LCFS-eligible fuels, including natural gas, hydrogen, and electricity derived from factory farm manure. Leadership Counsel invites any interested parties to review the comments submitted on the additional modifications on August 27, 2024.”

**Response:** Please refer to Master Response 1.

**R14-4:** The commenter states, “**II. The Recirculated DEIA fails to justify its position that factory farm herd expansion is not a reasonably foreseeable compliance response to the Proposed Amendments.**”

CEQA requires lead agencies to analyze all reasonably foreseeable environmental impacts caused by a project they are proposing to approve. *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 396-98; *Ebbets Pass Forest Watch v. Cal. Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 954-55. A public agency may only forego analysis of a project's impacts if they are too “speculative” to be subject to environmental review. *Santa Rita Union School District v. City of Salinas* (2023) 94 Cal.App.5th 298, 334-36. The DEIA's and Recirculated DEIA's approach to analyzing the environmental impacts of the Proposed Amendments begins with identifying actions that are deemed “reasonably foreseeable compliance responses” to the Proposed Amendments. Only those actions are subject to environmental analysis; all others are deemed speculative. The DEIA completely ignored factory farm herd expansion, failing to characterize it as either reasonably foreseeable or speculative. The Recirculated DEIA includes a cursory discussion that concludes factory farm herd expansion is speculative and thus does not require environmental analysis.<sup>8</sup> An agency's conclusion that a particular environmental impact is too speculative to be adequately analyzed must be supported by substantial evidence. *Santa Rita Union School District*, 94 Cal.App.5th at 335. The CEQA Guidelines require CARB to conduct

a “thorough investigation” and “note its conclusion” that the impact is too speculative to be considered. 14 Cal. Code Regs. § 15145; *County of Butte v. Dept. of Water Resources* (2023) 90 Cal.App.5th 147, 161; *Citizens’ Committee to Complete the Refuge v. City of Newark* (2021) 74 Cal.App.5th 460, 479. The Recirculated DEIA fails to satisfy this obligation.

The Recirculated DEIA does not acknowledge, let alone dispute, the overwhelming evidence cited by Leadership Counsel in its comments on the DEIA demonstrating the Proposed Amendments would result in herd expansion. New data further solidify the link between the LCFS and herd expansion. Instead of reckoning with these data, the Recirculated DEIA cites to faulty and irrelevant national and statewide data that do not show the absence of a link between the LCFS and factory farm herd expansion. The irrationality in the Recirculated DEIA’s arbitrary analysis is underscored by the other actions CARB deems to be reasonably foreseeable, which include the installation of anaerobic digesters and increased production of fuel derived from manure.

**A. The Recirculated DEIA fails to dispute the evidence cited by Leadership Counsel showing a clear link between the Proposed Amendments and factory farm herd expansion.** Leadership Counsel provided two distinct sources of evidence establishing a link between the LCFS and herd expansion, which would be strengthened by the Proposed Amendments: data from the 2022 United States Department of Agriculture’s Ag Census; and a comment letter by Dr. Silvia Secchi, a professor in the Department of Geographical and Sustainability Sciences at the University of Iowa.<sup>9</sup> The Recirculated DEIA fails to reckon with either.

The Ag Census data demonstrate that, during the period CARB has authorized LCFS crediting for fuel derived from factory farm manure, the number of milk cows at large California dairies increased, while the number of milk cows at smaller dairies decreased.<sup>10</sup> For dairies with 2,500 or more milk cows, the milk cow herd increased from 808,503 milk cows in 2017 to 1,025,716 milk cows in 2022, or an increase of 28.6 percent. Dairies with fewer than 1,000 cows saw a decrease of 52.4 percent across the same time period, providing significant evidence that LCFS crediting resulted in herd expansion.

The LCFS’s critical role in herd expansion is confirmed by pre-2017 Ag Census data, which demonstrates that the rate at which herds expanded increased after LCFS crediting for factory farm manure pathways began. In comments<sup>11</sup> on the DEIA, Leadership Counsel, Central Valley Defenders for Clean Water & Air, Animal Legal Defense Fund, and Food & Water Watch explained that Ag Census data show that the average dairy herd in California grew from approximately 940 to 1059 dairy cows between 2012 and 2017, while the average dairy herd jumped from approximately 1059 to 1511 between 2017 and 2022.<sup>12</sup> That represents a 12.66% increase in the average milk cow population between 2012 and 2017, and a 42.68% growth rate in the years between 2017 and 2022. These data clearly show that the rate of herd expansion increased after the LCFS changed its rules with respect to credit generation for fuel derived from factory farm manure began in 2018.

In her comments, Dr. Secchi cites to evidence demonstrating that, since the adoption of the LCFS, factory farms have expanded both inside and outside California.<sup>13</sup> She also pointed to evidence showing a link between the installation of digesters and herd expansion. Dr. Secchi concludes that expansion of herds is already occurring and “an increased market signal to produce more credits will further exacerbate that expansionary effect.” She focuses specifically on the proposal to increase the carbon intensity benchmarks and “therefore increase the economic value of methane captured from dairy operations,” which will “likely result in the expansion of dairy operations inside and outside of California.” Both the Ag Census Data and Dr. Secchi’s comments demonstrate that the LCFS has contributed to the rate of herd expansion, and this will only be exacerbated by the Proposed Amendments which increases the carbon intensity benchmark in 2025 as called for in the 15-day changes compared to the initial proposed benchmarks in the ISOR.”

**Response:** Please refer to Master Response 1 and Response to Comment R14-7.

Regarding the comparison of pre- and post-2017 data described by the commenter, During the California Dairy Sector Workshop CARB staff presented the trend of average dairy herd size in California from 2012 to 2022 using CADD. As slide 43 of the California Dairy Workshop presentation indicated, the average dairy herd size increased by 10% from 2012 to 2017 and by 12% from 2017 to 2022. The lowest annual increase in average dairy herd size was from 2014 to 2015 (0.07%) while the highest annual increase happened the following year (2.8%). Considering the annual variability in the average dairy herd size and numerous other factors that affect the dairy industry, the 2% higher increase over a 5-year period cannot be linked to LCFS credits.

CARB’s conclusion that LCFS crediting is not responsible for herd size changes is based on previous analyses (Please refer to Master Response 1) as well as more recent analysis conducted using the CADD dataset, which provided CARB even greater insight into herd size changes than past analyses based on USDA Ag Census data. Compared to the USDA Census data relied upon for the report cited by the commenter, CARB staff found that CADD offers improved frequency, spatial resolution, reliability and comprehensiveness of underlying data sources:

- Frequency (temporal resolution): While USDA Census is conducted every 5 years, CADD’s data is annual for 2012 to 2022.
- Spatial resolution: While USDA Census’s spatial resolution is at county level, CADD’s is at facility level, enabling the users to ground-truth each data point.
- Reliability: The USDA Census is based on voluntary reporting of “any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year.” For the year 2022, USDA reported that 22.6% of total California dairy farms (based on acreage) are “adjusted” to account for those that

didn't respond by assigning weights to returned reports<sup>23</sup>. In contrast, CADD's herd size data is solely based on regulatory records, and an estimation method was applied for less than 7% of dairy facilities across all data years. For example, for 2022, herd data for 60 of the 1,074 dairy facilities in CADD were estimated (5.6%).

- **Comprehensiveness:** As further discussed in Response to Comment R14-7, the list of permitted dairy facilities in California managed by CDFA is considered to be the best indicator of the comprehensiveness of dairy-related data sources in California, and the number of dairy facilities included in CADD (1,074 dairy facilities) is more similar to those permitted by CDFA (1,076 dairy facilities) than the USDA Census. The USDA Census reports 1,117 total facilities with milk cows in 2022, including cows for home use. If facilities with one to nine milk cows are excluded from the Census report to adjust for home use, the Census accounts for fewer facilities than CDFA and CADD across all Census years 2012, 2017, and 2022, and a significantly lower number if facilities with less than 50 mature cows are excluded.

**R14-5:** The commenter states, “**B. National data demonstrates that herd expansion has increased as a result of LCFS crediting for fuel pathways derived from factory farm manure.**”

FWW recently released the 2024 edition of its report, “Factory Farm Nation,” which provides clear evidence of the increase in nationwide herd expansion occurring after 2017.<sup>14</sup> FWW relied on Ag Census data to analyze factory farm consolidation on the county-level, ranking individual counties based on the density of animals on factory farms per square mile.<sup>15</sup> FWW categorized counties in the 2002 Census into quartiles based on their livestock density and applied these same benchmarks to subsequent Census years to show the change in growth over time. Counties are ranked “Severe,” “High,” “Moderate,” and “Low,”<sup>16</sup> with an “Extreme Outlier” category representing those exceeding the benchmark for the top 1% of counties by livestock density based on the 2002 Census disbursement. In 2022, 12 U.S. counties were Extreme Outliers for dairy cows on factory farms, including five in the Central Valley. The report is accompanied by an interactive map of the United States that displays density data for individual counties.<sup>17</sup> FWW concluded that, compared to the 2017 data, 49 additional counties in the nation ranked as “Severe” across the “All Livestock” category. The FWW data provides further evidence that the rate of growth in average herd size of operations with 500+ cows in California increased after LCFS crediting began. The Proposed Amendments will only further exacerbate the alarming trend of herd expansion.”

**Response:** Please refer to Master Response 1 and Response to Comment R14-7. Staff acknowledge the trend that herd sizes have increased over the past several decades, but have not identified evidence that digester incentives have contributed to the rate of herd size growth.

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<sup>23</sup> NICE ARG Census Publication Generator Page A – 16

[https://www.nass.usda.gov/Publications/AgCensus/2022/Full\\_Report/Volume\\_1\\_Chapter\\_1\\_State\\_Level/California/cav1.pdf](https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1_Chapter_1_State_Level/California/cav1.pdf) (accessed October 2024)

**R14-6:** The commenter states, “**C. The national trend towards herd expansion in no way negates the LCFS’ contribution to that trend.**”

Rather than reckoning with the data provided by Leadership Counsel, the Recirculated DEIA asserts that there is no link between the LCFS and herd expansion, relying in part on nationwide dairy industry data. The Recirculated DEIA points to data showing a national trend in the dairy industry over the last 25 years towards herd consolidation which is purportedly “expected to continue in the near term, independent of the Proposed Amendments.”<sup>18</sup> The Recirculated DEIA states that “[l]arger herd sizes allow facilities to generate increased commodity revenues while reducing the economic impact of production costs driven by a variety of factors,” and it is this “basic economic fact, and not actions taken in response to the LCFS,” that leads to herd expansion.<sup>19</sup>

The national trend cited by the Recirculated DEIA says nothing about the link between the LCFS and herd expansion. That herd expansion would likely continue to increase absent the existence of the LCFS in no way demonstrates that the LCFS has not increased the rate of expansion. As discussed in Section II.A of these comments, the data submitted by Leadership Counsel, ALDF, and FWW demonstrate the rate of herd expansion increased after avoided methane crediting began in 2018. Moreover, the substantial financial incentives provided by the LCFS, which will be increased by the Proposed Amendments, are an integral part of the “basic economic fact”<sup>20</sup> driving factory farm consolidation. Larger herd sizes “allow facilities to generate increased commodity revenues,”<sup>21</sup> in part, due to the credits provided by the LCFS for fuel derived from manure. The financial incentives provided by the Proposed Amendments drive herd expansion, just like each of the other economic factors cited in the Recirculated DEIA. Singling out the LCFS’s incentives as an unimportant contributor to the overall trend of consolidation is arbitrary and belied by the available data.

That there is an alarming national trend towards expansion of herd sizes, and a corresponding increase in associated environmental impacts, only further underscores the severity of the Proposed Amendments’ incremental contribution to that trend and those impacts. Under CEQA, “the greater the existing environmental problems are, the lower the threshold should be for treating a project’s contribution to cumulative impacts as significant.” *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 120. The communities adjacent to factory farms have been forced to bear a severe pollution burden as a result of factory farm consolidation. Even a slight increase in herd sizes and the associated adverse health impacts will cause monumental damage. Thus, far from demonstrating that the LCFS and herd expansion have no connection, the national, industry-wide trend towards factory farm consolidation is one of the core reasons why it is critical for CARB to analyze the impacts of additional expansion caused by the Proposed Amendments.

**Response:** Please refer to Master Response 1.

**R14-7:** The commenter states, “**D. The faulty statewide data relied on by the Recirculated DEIA do not provide substantial evidence to support CARB’s position.**”

The Recirculated DEIA points to two pieces of statewide data presented in CARB's recent California Dairy Sector Workshop that purport to support its position that there is no link between the LCFS and herd expansion.<sup>22</sup> The Recirculated DEIA claims that CARB has conducted extensive data collection on California dairies, and did not find that the existing LCFS has contributed to herd expansion. The Workshop presentation contains a table showing that statewide average dairy herd size has been growing steadily since 2013, and there was no considerable increase after LCFS crediting began.<sup>23</sup> The Recirculated DEIA also asserts CARB staff have analyzed data from California dairies and concluded there is no statistical relationship between the installation of digesters and dairy growth rates. The Workshop presentation provides the summary of an analysis that showed the growth rate for dairies of similar herd sizes with and without digesters was equal.<sup>24</sup>

The data presented in the Workshop does not show the absence of a link between the LCFS and herd expansion, for numerous reasons. For one, CARB recently developed and released the CADD and its summary analysis of the data in the CADD and both the underlying data and the analysis are currently subject to public review. In fact, CARB staff confirmed to Leadership Counsel that the "CADD Technical Document," which is intended to help interested parties understand the CADD, is still under internal review and not available to the public.<sup>25</sup> Comments are due on both the CADD and the analysis presented by CARB at an August 22nd workshop on October 22nd, more than three weeks following the deadline for comments on the DEIR.<sup>26</sup> It is inappropriate for the CARB, in its environmental review, to rely on draft data and a draft analysis that is still in the midst of a public review process.

Additionally, there are myriad problems with the data CARB is relying on, all of which were created using the California Dairy and Livestock Database ("CADD").<sup>27</sup> The data itself are incomplete and rely on assumptions to fill data gaps when reporting information is not available. For instance, if data are not available for a given year, CADD looks to data for neighboring years. If there are no such substitute data, CADD looks to other such data including air district permits that do not reflect the actual herd size at a given time. This results in data with dubious accuracy. For example, according to CADD data, over 400 livestock operations with dairy cows show the identical number of both milk cows and dry cows for at least three consecutive years during the 2017-2022 time period.

Additionally, there are apparent inaccuracies or discrepancies in the data when compared to other data sources. Our review of the data revealed several other discrepancies and inaccuracies, such as the inconsistency of the CADD data for the year 2022 with other data sources beyond USDA data. For instance, several dairies in Tulare County reported different data to Tulare County as part of the county's reporting program as compared to the data included in the CADD.<sup>28</sup> Hettinga Farms reports 5,942 cows per the CADD data in 2022, and 6,671 cows per Tulare county data in 2022. Avenue 128 Dairy reports 3,519 cows according to CADD data, and 4,252 cows per Tulare County data. JR Dairy reports 5,714 cows to Tulare County in 2022, and has 5,570 according to CADD in the same year.

Similarly, several Tulare County dairies show vastly different populations in the CADD data for 2022 compared to populations reported on their LCFS Tier 2 applications.<sup>29</sup> Again, Hettinga



Farms, which reports 5,942 cows in the CADD data, reports 6,900 on Tier 2 Pathway Application No. B0543, deemed complete in 2023. Avenue 128 Dairy in Tipton reports 3,519 cows in 2022 according to CADD, and 5,300 according to Application No. B0543. JR Dairy, with 5,570 cows according to CARB, reports 6,300 on Application No. B0543. It bears noting that these data also indicate that CADD data undercount livestock populations for numerous dairies.

Furthermore, CARB's summary conclusions presented in its Dairy Workshop on August 22nd, 2024 are unsupported by data at best, and designed to mislead at worst. Here are just a few of examples of how CARB's analysis misstates or obscures facts to reach its desired conclusion that LCFS credits are not causally linked to herd expansions:

(1) CARB states that the overall herd is declining yet somehow finds that both dairies with digesters and dairies without digesters that remain in operation as of 2022 (two groups that presumably comprise the whole of the dairy industry) grew between 2017 and 2022. That can only be possible if CARB removed a class of dairies – likely those dairies that ceased to exist – from the analysis. The vast majority of dairies that ceased to exist between 2017 and 2022 were dairies without digesters. If the 100% reduction in herd size for those dairies that ceased to exist were included in the herd size change of dairies without digesters, the data would not show that dairies without digesters grew from 2017 to 2022. CARB has not provided a true and accurate comparison of the growth rate of dairies with digesters and those without digesters between 2017 and 2022.

In case an example of this data manipulation is helpful: Imagine 15 dairies, all with 100 cows. 5 have digesters (500 cows total), 10 do not (1000 cows total). Of the 10 that do not have digesters, 5 cease operation and 400 of their 500 cows get dispersed evenly between dairies with digesters and those without. The 5 dairies with digesters now have 700 cows total, and the dairies without digesters have 700 cows total. The annual population growth / decline rate of the 5 dairies with digesters is 8% and also 8% for the 5 dairies without digesters *if you only count those dairies that survived*. A true and accurate picture of the performance of dairies without digesters would include the population loss of the 5 dairies that went defunct. Including that data, the population growth / decline rate of the 10 dairies without digesters is *negative* 6%.

(2) CARB's analysis of comparing the growth rates of dairies with digesters and those without digesters excludes several dairies from the analysis and may misclassify other dairies into the wrong category. CARB's analysis only includes in its digester dairies set dairies with digesters that are operational in 2022. And it only includes dairies in the set of non-digester dairies if they did not have an operational *or* under construction digester in 2022. (slide 46). This skews and / or confuses the data and analysis in two ways:

- a. It is unclear how CARB classifies dairies that had a digester under construction in 2022. It appears that they are in neither class. If this is true, CARB has erased from its analysis any dairy that had a digester under

construction in 2022. It is not apparent which dairies fall into this category and this gap calls into question both CARB’s methodology and its conclusions. For instance, the exclusion of California Dairy Farms (CDF) Howard, which has a digester as of 2024 (according to CADD data) would exclude critical data from the analysis assuming CDF’s digester was under construction in 2022. CDF grew from 1,370 in 2017 to 4,500 on in 2022 according to the CADD.

b. There are several dairies in the CADD data that indicate that a digester was installed in 2023, 2024, 2025 or a date yet to be determined. As noted in (a) above, some of these dairies are likely excluded from the analysis, and some dairies such as those dairies that did not have a dairy in construction in 2022 may be misclassified as a dairy without a digester. For example, how does CARB classify the Manuel Godinho dairy, which the CADD indicates will have a digester but does not indicate which year the digester will be operational? That dairy has enjoyed growth from 1800 to 4072 mature cows between 2017 to 2022. Excluding that dairy from the data set of dairies with digesters certainly would skew the data away from evidence of growth trends among dairies with digesters. If it is included in the data set of dairies without digesters, it would both skew the data regarding dairies with digesters and those without.

**Table Summarizing CARB’s Apparent Classification of Dairies for Purposes of Analyzing Herd Size Changes of Dairies with Digesters Compared to Those Without**

|                | Dairy with Operational Digester in 2022 | Dairy with Digester in construction in 2022  | Dairy with digester not in construction in 2022 and operational in 2023 or beyond |
|----------------|---|--|---|
| Classification | Digester Dairy                          | Dairy is apparently excluded from both the digester dairy and non-digester dairy categories. | It is unclear how this dairy would be classified.                                 |

Taking items and (1) and (2) together, CARB’s analysis of the growth rate of dairies with and without digesters apparently excludes at least two important classes of dairies – those that closed between 2017 and 2022 and those that had a digester in construction in 2022. The reader does not have access to information to assess which dairies had digesters in construction in 2022.

(3) CARB’s analysis of the CADD inexplicably changes its conclusion as to the growth rate of larger dairies without digesters.

CARB’s presentation notes that the growth rate of larger dairies (greater or equal to 1000 mature cows) is .8 percent on slide 48. However, on the following slide it concludes, based on a different analysis that looked at “weighted mature cow herd size data of non-digester dairies that had a similar herd size distribution to the digester dairies” that similar sized dairies with

and without digesters are both equal to 1.3%. CARB provides no further information as to the methodology that supports this conclusion, including what is meant by “weighted mature cow herd size data” or what dairies were included in that analysis. Presumably that analysis continues to exclude dairies that shuttered between 2017 and 2022 and either excludes or misclassifies dairies that did not have an operational digester in 2022.

Even if the data the Recirculated DEIA relied on was reliable, its effectiveness is limited by its Statewide scope. That the State as a whole may not have experienced a considerable increase in the rate of herd expansion after LCFS crediting began does not mean that is true for each individual region in the State. As the FWW data showed, there are many individual regions in the State that did experience an increase in the rate of herd expansion after the LCFS crediting began. The Recirculated DEIA provides no, let alone substantial, evidence demonstrating that there is no link between the LCFS and herd expansion in the regions identified in the Food and Water Watch analysis.”

**Response:** Please refer to Master Response 1 and Response to Comment 215-1.

CARB acknowledges that discrepancies may exist between different data sources. However, Water Board annual reports were used as the primary data source due to their comprehensiveness (statewide), frequency (annual), historical record, and refined cattle categories. No other publicly available data sources have been identified that are more comprehensive than the Water Board’s annual reports. Regarding the commenter’s assertion that data relied on in staff’s analysis is incomplete, CARB staff determined that the most comprehensive publicly available data source for the number of operational dairies in California is the CDFA’s list of permitted dairy farms, as any farm with more than two milk cows must hold a permit to produce milk for distribution. As presented at the Dairy Sector Workshop,<sup>24</sup> the number of dairy farms included in CADD is very similar to those permitted by CDFA: for 2022, CADD includes 1,074 operational dairies while CDFA had 1,076 permitted facilities.

As presented during the workshop, approximately 95% of herd size data included in CADD is based on submitted annual reports, and only approx. 5% of the data is estimated using annual reports of other years or other regulatory documents (listed on slide 35). Additionally, having an identical number of cows for several years does not mean the data is being estimated. Many facilities reported the same mature cow herd sizes in consecutive years.

Air permits data was only used for 2 dairies (less than 0.2% of dairies). Since air permits only list the maximum herd size values, an analysis was conducted of dairies with available 2019 annual reports and air permits as of 2019 to determine the ratio of average to maximum mature cow herd size.

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<sup>24</sup> California Air Resources Board, California Dairy Sector Workshop staff presentation, Slide 38 [https://ww2.arb.ca.gov/sites/default/files/202408/CARB\\_Dairy\\_Sector\\_Workshop\\_Staff\\_Presentation\\_08-22-2024.pdf](https://ww2.arb.ca.gov/sites/default/files/202408/CARB_Dairy_Sector_Workshop_Staff_Presentation_08-22-2024.pdf) (Accessed August 12, 2024).

Regarding the commenters concerns about facilities that were excluded from the analysis of herd growth rates: The goal of the analysis on slide 47 of the Dairy Sector Workshop presentation was, in part, to explore stakeholder concerns that facilities with digesters exhibited a higher herd size growth rate than facilities without digesters. Only operational dairies (as of 2022) were considered because including dairies that shut down would mask the true growth rates of facilities that remained operational. Facilities that shut down are not germane to concerns around expansion, and therefore were not included.

The commenter suggests that dairies with “under-construction” digesters in 2022 should be assigned to the Digester Dairies group. CADD’s Anaerobic Digesters table is based on available data through early 2023.<sup>25</sup> Therefore, when a digester’s operational year was given as 2023 or beyond, it is considered to be a projection, and does not necessarily mean that a digester was being built in 2022. Staff is aware of some facilities that were initially selected to receive a digester grant but did not complete the digester installation, including one case in which the dairy closed after being selected as a grant recipient. Further, AgSTAR includes facilities that did not receive a digester grant, and may be in any stage of planning or financing, or had at one time explored or expressed interest in utilizing a digester. For this reason, staff relied only on those with a known digester completion date to improve certainty.

**R14-8:** The commenter states, “E. The Recirculated DEIA takes an arbitrary, inconsistent position towards factory farm herd expansion that it does not apply anywhere else in its analysis.

CARB generally takes a broad approach to determining which actions are reasonably foreseeable compliance responses that require environmental analysis—except when it comes to herd expansion. Notably, the DEIA and Recirculated DEIA take the position that the installation of anaerobic digesters at factory farms is a reasonably foreseeable compliance response.<sup>30</sup> The reason articulated for this is that the Proposed Amendments would “incentivize the collection and use of biomethane gas from dairies.”<sup>31</sup> That is precisely the reason why herd expansion is also a reasonably foreseeable action that requires environmental analysis. The Recirculated DEIA also states that a “potential compliance response is additional production of low-CI electricity or hydrogen from biomethane derived from dairy operations.”<sup>32</sup> It defies all logic to conclude that additional production of fuel from factory farm manure is a reasonably foreseeable compliance response, but herd expansion—one of the clearest ways to increase fuel production—is too speculative to be analyzed.

CARB also acknowledged that actions taken to increase the source materials needed to produce LCFS-eligible fuel are reasonably foreseeable compliance responses to the Proposed Amendments. For example, the DEIA and Recirculated DEIA concluded that “increased collection of source materials” for cellulosic ethanol production is a reasonably foreseeable compliance response to allowing LCFS credits for cellulosic ethanol production.<sup>33</sup> The DEIA and Recirculated DEIA also concluded that “increased feedstock processing and transport” is a reasonably foreseeable compliance response to allowing LCFS credits for biofuels derived

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<sup>25</sup> DDRDP (accessed in April 2023) and AgSTAR (accessed in January 2024)

from feedstock.<sup>34</sup> Herd expansion is reasonably foreseeable for exactly the same reason that these actions are reasonably foreseeable: the LCFS provides a substantial financial incentive to increase production of fuel derived from factory farm manure, and increasing manure through the expansion of herds allows for increased fuel production.

The DEIA and Recirculated DEIA go even further, concluding that that global changes in land use to accommodate the production of crop-based feedstocks is a reasonably foreseeable response to allowing LCFS credits for biofuels that rely on these crops.<sup>35</sup> Additionally, CARB takes the position that the construction of new solar and wind electricity generation projects are reasonably foreseeable compliance responses to the LCFS allowing credits for electricity as fuel.<sup>36</sup> The connection between the Proposed Amendments and these actions is significantly more tenuous than that between LCFS crediting for fuel derived from factory farm manure and herd expansion.

In light of the actions CARB deems to be reasonably foreseeable compliance responses, the Recirculated DEIA's conclusion that herd expansion is "speculative" falls flat. The Recirculated DEIA states that whether a factory farm will expand "is speculative because it is subject to a fact-intensive, complex economic determination relying upon local, unforeseeable circumstances."<sup>37</sup> According to CARB, "[e]valuating the potential for the Proposed Amendments to cause herd size expansion would require making multiple inferences about what changes in the economic, regulatory, and operating landscape led to a change in a dairy's operation, which would require data about business owner future decision-making to differentiate and isolate."<sup>38</sup>

But that is true for each of the reasonably foreseeable compliance responses identified by CARB. A Brazilian agricultural company's decision to engage in deforestation to produce crops for biofuels that will be used in California is certainly a "fact-intensive, complex economic determination relying upon local, unforeseeable circumstances." Analyzing the impacts associated with a renewable energy company's decision to construct new wind turbines or solar facilities certainly requires "making multiple inferences" about "the economic, regulatory, and operating landscape." The decision to expand a herd is no more "speculative" than the decision to install a digester at an existing factory farm, or increase production at a factory farm that already has a digester. Yet, the Recirculated DEIA fails to follow its own analysis to its logical conclusion, in an effort to avoid the obvious reality that the financial incentives provided by the Proposed Amendments will drive herd expansion."

**Response:** Please refer to Master Response 1. In aggregate, statewide dairy cattle populations are declining, and have remained relatively constant nationally. This suggests that herd expansion represents shifting livestock among operations. These assessments are appropriately evaluated on a site-specific basis where the actual impacts of the project can be assessed. The Recirculated DEIA appropriately evaluates and discloses the programmatic impacts of this and other reasonably foreseeable compliance responses.

As previously noted, herd consolidation into fewer, larger farms has been occurring nationwide for decades, including at dairies with digesters. Herd size expansion, however, is not

ubiquitous and is heavily dependent upon site-specific factors. The complexity and site-specific nature of herd expansion makes these decisions too speculative to be evaluated at the programmatic level, especially absent direct causal evidence.

**R14-9:** The commenter states, “**III. The Recirculated DEIA does not even attempt to remedy the DEIA’s numerous other flaws.**”

The flaws in the DEIA were not limited to its failure to even acknowledge the factory farm herd expansion that will result from the Proposed Amendments. Despite acknowledging that the installation of anaerobic digesters at factory farms and other methane emitting facilities was a reasonably foreseeable compliance response to the Proposed Amendments, the DEIA failed to seriously analyze the environmental impacts caused by digesters. The DEIA also took the legally erroneous position that CARB is unable to include any enforceable mitigation measures in the Proposed Amendments. Lastly, the DEIA failed to analyze all reasonable alternatives by which the State can achieve its methane reduction goals. The Recirculated DEIA either entirely ignores, or doubles down on, the DEIA’s errors.”

**Response:** This comment is an introductory remark and provides a summary of comments. Responses to specific issues are addressed in the responses below, as appropriate.

**R14-10:** The commenter states, “**A. The Recirculated DEIA does not attempt to supplement the DEIA’s woefully deficient analysis of the environmental impacts of anaerobic digesters.**”

In comments on the DEIA, Leadership Counsel explained in great detail why the discussion of the environmental impacts associated with anaerobic digesters was legally and scientifically insufficient. The DEIA failed to adequately analyze nitrogen-based emissions from digesters that contribute to particulate matter nonattainment and climate change.<sup>39</sup> Additionally, the DEIA failed to sufficiently analyze ammonia emissions associated with digestate—the material remaining after the anaerobic digestion of manure.<sup>40</sup> The DEIA also failed to adequately consider discharges to groundwater associated with digestate.<sup>41</sup> The DEIA’s discussion of NOx emissions was similarly deficient. The DEIA failed to analyze NOx emissions from flaring biogas, ignored NOx emissions from biomethane after 2039, and assumes fuel cells will be used to produce electricity when analyzing the NOx emissions associated with biomethane electric fuel pathways, despite 19/20 certified biomethane electric vehicle fuel pathways relying on internal combustion engines—not fuel cells and that the Air District has found fuel cells to be not cost effective and thus not required as Best Available Control Technology.<sup>42</sup>

The Recirculated DEIA does not even attempt to supplement this incomplete and misleading analysis. Insufficient discussion of the significant environmental impacts of the Proposed Amendments violates CEQA even though CARB ultimately concluded the air quality impacts of the Proposed Amendments would be significant and unavoidable. The California Supreme Court has held that “an EIR’s designation of a particular adverse environmental effect as ‘significant’ does not excuse the EIR’s failure to reasonably describe the nature and magnitude of the adverse effect.” *Cleveland Nat’l Forest Foundation v. San Diego Assn. of Governments*

(2017) 3 Cal.5th 497, 514. CARB’s analysis must “sufficiently explore[] the significant environmental effects created by the project.” *Berkely Keep Jets Over the Bay Committee v. Board of Port Com’rs* (2001) 91 Cal.App.4th 1344, 1371. The DEIA and Recirculated DEIA failed to comply with this obligation.”

**Response:** Please refer to Master Response 1 and 4.

**R14-11:** The commenter states, “**B. The Recirculated DEIA doubles down on the DEIA’s legally inadequate approach to mitigation.**”

The Recirculated DEIA repeats the DEIA’s legally flawed approach to mitigation measures, failing to adopt a single enforceable mitigation measure despite concluding the Proposed Amendments would have significant environmental impacts. Where, as here, a lead agency determines a project will have significant environmental impacts, CEQA requires the agency to adopt all feasible mitigation measures to reduce the severity of those impacts. Public. Res. Code § 21002; *Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011, 1027. The obligation to adopt all feasible mitigation measures applies with full force where the project is the enactment of a regulation. 14 Cal. Code Regs. § 15126.4(a)(2) (“In the case of the adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design”). Mitigation under CEQA can take many forms, including avoiding the impact altogether by not taking a certain action or parts of an action and minimizing impacts by limiting the degree or magnitude of the action and its implementation. 14 Cal. Code Regs. § 15370.

The DEIA took the position that, because CARB has no authority over the projects and actions that will be taken in response to the Proposed Amendments (e.g., installation of anaerobic digesters), CARB has no ability to incorporate enforceable mitigation measures into the Proposed Amendments. The Recirculated DEIA takes the same approach.<sup>43</sup> CARB continues to confuse the project before it—the Proposed Amendments—with the individual projects that will be undertaken as a result of the Proposed Amendments. CARB certainly has the authority to change the Proposed Amendments themselves to reduce their severity, as CEQA requires. 14 Cal. Code. Regs. § 15126.4(a)(2). Leadership Counsel identified numerous feasible mitigation measures that CARB can incorporate into the Proposed Amendments to lessen the severity of the impacts associated with factory farm expansion and digester use.<sup>44</sup> CARB’s failure to consider and adopt these measures is a clear violation of CEQA.”

**Response:** Please refer to response to Comments 299-16 and 299-18 regarding mitigation measures and Master Response 1 regarding herd size expansion

**R14-12:** The commenter states, “**C. The Recirculated DEIA fails to correct the DEIA’s incomplete alternatives analysis.**”

The Recirculated DEIA also fails to supplement the DEIA’s discussion of reasonable alternatives. CEQA requires CARB to describe a range of “reasonable alternatives to the project,” which would “attain most of the basic objectives of the project but would avoid or

substantially lessen any of the significant effect of the project,” and evaluate the “comparative merits” of the alternatives. 14 Cal. Code. Regs. § 15126.6. This discussion is “the core” of CEQA analysis. *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564. The DEIA’s alternatives analysis consisted solely of different versions of the LCFS; the Recirculated DEIA does not even attempt to add to this insufficient discussion.

Leadership Counsel emphasized that the DEIA’s discussion of alternatives assumed the only method by which the State can achieve its methane emissions reduction goals is through the LCFS’s indirect, incentive-based regulation.<sup>45</sup> The State Legislature has granted CARB the regulatory authority to directly regulate the major sources of methane emissions within the State, including the dairy and livestock industry, landfills, and the oil and gas system. To date, CARB has taken action to directly regulate landfills (the Landfill Methane Regulation, Cal. Code of Regs., tit. 17 §§ 95460, et seq.) and the oil and gas system (the Oil and Gas Methane Regulation, Cal. Code of Regs., tit. 17, §§ 95665-77). However, CARB has yet to directly regulate the dairy and livestock industry—the largest source of methane emissions within the State as required by Health & Safety Code § 39730.7.

CARB must analyze an alternative scenario that includes the following components: (1) elimination of LCFS credits for fuel derived from manure methane emissions; (2) implementation of direct regulation of factory farms to achieve the same level of methane reduction CARB currently contemplates will be achieved through the LCFS; and (3) decrease the stringency of the LCFS’ carbon intensity requirement, to ensure the elimination of credits for fuel derived from manure methane emissions does not affect credit prices negatively and risk the State failing to achieve its fuel decarbonization goals. Its failure to do so is clear legal error.”

**Response:** Please refer to response to Comment R16-8 regarding the EIA’s analysis of a reasonable range of alternatives. As explained in response to a petition for rulemaking earlier this year,<sup>26</sup> CARB is currently continuing work evaluating the need for a regulation to directly regulate livestock methane emissions pursuant to Senate Bill 1383. The project objectives for the Proposed Amendments include updating and strengthening carbon intensity benchmarks in alignment with the 2022 Scoping Plan, incentivizing fuel production and refueling infrastructure buildout needed to meet California’s long-term climate goals, and supporting the transition of biomethane fuel pathways for combustion out of transportation. The proposed alternative to abandon the Proposed Amendments’ approach to incentivizing livestock methane reductions with the LCFS and associated near-term emissions reductions, while critical work is ongoing to make statutorily required feasibility and other determinations before implementing a direct livestock methane emissions regulation under Health and Safety Code section 39730.7 would be inconsistent with those objectives, and is therefore infeasible.

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<sup>26</sup> See CARB Response to Petition for Rulemaking to Regulate Methane and Other Air Pollutants from California Livestock, <https://ww2.arb.ca.gov/sites/default/files/2024-05/2024-05-30-CARB-CDFA-Response-to-Dairy-Rulemaking-Petition.pdf>.



**R14-13:** The commenter states, “The Recirculated DEIA contradicts CEQA, science, and CARB’s own analysis to avoid the undeniable conclusion that providing significant financial incentives to factory farms who produce fuel derived from manure will lead to herd expansion. CEQA requires CARB to acknowledge the Proposed Amendments’ impact on herd expansion, and analyze the severe environmental impacts associated with factory farm consolidation. Leadership Counsel respectfully urges CARB to delay further consideration of the Proposed Amendments until the agency conducts the rigorous environmental review that CEQA requires.”

**Response:** The comment provides a summary of the detailed comments provided above. Please refer to Responses to R14-1 through R14-12.

**Letter attachments:** This letter included the following attachments: “Factory Farm Nation”, California Dairy Sector Workshop Slides, California Dairy & Livestock Database “Read Me” Document, Email Exchange between Phoebe Seaton of Leadership Counsel and California Air Resources Board Staff (September 24, 2024), California Dairy & Livestock Database General Information Table, California Dairy & Livestock Facility Herd Size Table, California Dairy & Livestock Anaerobic Digesters Table, Individual Dairy Annual Compliance Report Data, and Low Carbon Fuel Standard Tier 2 Pathway Application No. B0543 Staff Summary. None of the attachments raise significant environmental issues related to the analysis in the Recirculated Draft EA, and the responses above in R14 respond to the comments citing to these attachments. Therefore, no further response is necessary.

**Comment Letter R15a**

2024/30/09

Steven Berry, David Swenson Professor of Economics, Yale University and  
Timothy D. Searchinger, Senior Research Scholar, Princeton University

**R15a -1:** The commenter states, “We are an economist at Yale University and an environmental scientist at Princeton University and have written papers analyzing the emissions from biofuel use and global land use models. We have previously submitted comments on the proposed revisions to the LCFS and on the most recent 15-day rule amendments. These comments also include a recent paper in which we analyze the GTAP model used by CARB to estimate indirect land use change emissions from crop-based biofuels. In these comments, and in this paper, we briefly explain the compelling evidence that crop-based biofuels are contributing heavily to global cropland expansion and tropical deforestation and likely increase emissions relative to fossil emissions. We also explain how the GTAP model lacks a credible empirical basis, how it has built in structural biases and ungrounded assumptions that guarantee the low ILUC estimates, and how it produces physically impossible land use results by a large margin that are then arbitrarily readjusted to conserve land.

We here resubmit these earlier comments and attachments and now also include an annotated slide presentation that summarizes our research findings. We also include comments submitted by Searchinger and Professors Dan Kammen and Michael O’Hare of the University of California at Berkeley to a panel of the National Research Council that discusses these issues.”

**Response:** The comment provides an introduction to the subsequent comments provided below. Please refer to Responses to R15a-2 through R15a-4.

**R15a -2:** The commenter states, “The GTAP model results provide the core justification in the recirculated draft environmental impact statement of the findings that the proposed LCFS revisions will reduce greenhouse gas emissions. These findings of reduced emissions are implicitly or explicitly mentioned in much of the document and set forth quantitatively on pages 59-60. In fact, the best evidence is that at least the elements of the rule that assign reductions in greenhouse gas fuel intensity to crop-based biofuels in general, and vegetable oil-based biofuels in particular, will likely result in large increases in global greenhouse gas emissions over the 30-year period that CARB uses to evaluate the effects of biofuels. These increased emissions are particularly significant if CARB does not cap crop-based biofuels. Because the GTAP model lacks a credible empirical basis for the reasons set forth in our paper, the findings of greenhouse gas reductions in the EIS lack a credible basis or substantial evidence.”

**Response:** Please refer to Master Response 2.

**R15a -3:** The commenter states, “Another concern with the draft EIS is that it fails to acknowledge the prominent role that reduced food consumption due to higher food prices plays in CARB’s lifecycle analysis for biofuels, and particularly ethanol. These effects were

revealed in a paper published by the original GTAP modelers for CARB (Hertel et al. 2010). This effect was also further elaborated in a paper by Searchinger (Searchinger et al. 2015), and was the focus of comments by Berry when hired as an expert consultant by CARB at the time GTAP was first used.”

**Response:** Please refer to Master Response 2.

**R15a-4:** The commenter states, “To summarize the implications for food consumption, one prediction of the GTAP model is that roughly half of the crop calories diverted to corn ethanol are not replaced. The reduced food consumption by people or by the livestock they eat results in reduced respiration of carbon dioxide. The way the lifecycle calculation works, this reduction in respiration works as an offset to the greenhouse gas emissions that occur when ethanol is combusted. (Illustrations showing how this offset works in lifecycle analyses are shown in Searchinger [2010]). Without this effect, the GTAP model would have found that ethanol increases greenhouse gas emissions. Although the lack of credibility of the GTAP model makes this finding questionable, if CARB relies on the GTAP model, the role of reduced food consumption should be prominently disclosed to allow a proper consideration of the proposed rule. There is also more reliable evidence that in the short-term, biofuel increases do result in reduced food consumption (Roberts and Schlenker 2013).”

**Response:** Please refer to Master Response 2 and 5.

**Comment Letter R15b**

2024/09/30

Steven Berry, David Swenson Professor of Economics, Yale University and  
Timothy D. Searchinger, Senior Research Scholar, Princeton University

**R15b-1:** The commenter states, “We are an economist at Yale University and an environmental scientist at Princeton University and have written papers analyzing the emissions from biofuel use as well as economic land use models. Our shortform CV’s are attached. Berry previously served as a consultant for CARB on economic issues related to the analysis of indirect land use change from biofuels. We offer the following comments.”

**Response:** This comment introductory in nature and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R15b-2:** The commenter states, “There are compelling reasons to believe that biofuels are contributing significantly to global agricultural land expansion and associated greenhouse gas emissions. There is now a sound satellite study of cropland expansion, which finds that annual crops are expanding at a record rate of roughly 25 million acres per year (Potapov et al. 2021). FAO data would indicate expansion of an additional 2.5 million acres per year of perennial

crops. This is net expansion, which is caused by growing global demand for agricultural products, including for biofuels.

According to the same study, global expansion is roughly double, but the roughly 20 million hectares of expansion of arable cropland is offset by roughly 10 million hectares of abandonment. Yet, even with this abandonment, the gross expansion causes additional carbon losses both because it is occurring heavily in carbon-rich lands and because the carbon losses are relatively immediate compared to the carbon gains from regrowing native vegetation. These shifts reflect the fact that agriculture is not only expanding on a net basis but also to some extent shifting, particularly into the tropics, in response to changing economics. These shifts reflect, in part, an outsourcing of agricultural production by countries in the global north, and are indicative of how demand in the global north, including for biofuels, helps to drive expansion and carbon losses in the Global South. (Pendrill et al. 2019) (T. Searchinger et al. 2022)."

**Response:** Please refer to Master Responses 2 and 3.

**R15b-3:** The commenter states, "Oilseeds, which occupy roughly one quarter of global cropland, are major drivers of this expansion including soybeans and oil palm (Weisse and Goldman 2021). Since 2005, when global policy began to drive large increases in biofuels, biodiesel has contributed more than 40% of the increase in global demand for vegetable oil. As discussed in the attached paper regarding the GTAP model, there is strong econometric evidence that prices of vegetable oils and the major grains move in parallel in different parts of the world. This is no surprise. Any simple observation of a chart on global vegetable oil prices for different vegetable oils in different parts of the world shows that their prices move closely in parallel. Global commodity traders ensure this parallel movement as they are engaged in global arbitrage. This means that vegetable oils have high substitutability at the margin. It means that increased demand for vegetable oil anywhere in the world and for any vegetable oil will tend to cause the same price response and therefore lead to similar expansion of vegetable oils. Not surprisingly, cropland will expand most where it is most economical to do so, namely in the Tropics and Neo-tropics. And vegetable oil expansion in the Global North will contribute to this cropland expansion further to replace displaced crops."

We therefore support proposed changes to the Low Carbon Fuel Standard that would impose caps on biodiesel production from virgin vegetable oil. As the above discussion indicates, this cap should be extended to all vegetable oils, including corn oil and sunflower oil, as increases in demand for any vegetable oil will cause comparable increases in demand for vegetable oil in general and will therefore elicit very similar market and land responses. There is no reason to exempt corn or sunflower oil from the cap."

**Response:** Please refer to Master Responses 2 and 3.

**R15b-4:** The commenter states, "More generally, in this rulemaking CARB should commit to an immediate and expeditious reevaluation of the way it estimates the climate costs of using land for biofuels. When lifecycle analyses such as those used by CARB ignore the emissions of

burning biofuels, they are implicitly offsetting these emissions by the carbon removed from the atmosphere by plant growth. This is the climate benefit. But it takes land to grow these plants, and not using this land for other purposes has a climate cost. The evaluation of biofuels is largely based on the valuation of this cost of dedicating the productive capacity of land to biofuel production. Today, indirect land use change estimated by a version of the GTAP is the only way CARB assigns a climate cost to the use of land. There are several reasons this needs prompt evaluation.”

**Response:** Please refer to Master Response 2.

**R15b-5:** The commenter states, “First, GTAP lacks an empirical basis, and builds in structural biases that guarantee low ILUC estimates. Many of its predictions are also contradicted by substantial bodies of empirical evidence. In summary:

- GTAP does not work with physical acres but only land revenues, which leads the model to create or destroy large quantities of land. Its economic components estimate a large ILUC, but modelers artificially readjust this estimate by a “hand of God” to conserve land area, which leads to the small ILUC. This kind of readjustment is inherently invalid. If the economic components of the model are correct, then the readjusted results are incorrect. If the economic estimates are physically impossible, then the model is invalid.

**Response:** Please refer to Master Response 2.

**R15b-6:** The commenter states, “• Several invalid model features make it extremely difficult for the model to convert forests. “Unmanaged” forests do not exist in the model although they are the major concern with cropland expansion. The authors also chose a forest area elasticity many times higher than the underlying study they cite, which causes forests to strongly resist conversion or immediately reappear elsewhere if converted in one location.”

**Response:** Please refer to Master Response 2.

**R15b-7:** The commenter states, “• Although the model has thousands of economic parameters, only a handful are based on any cited reference, none instrumented, and are then incorrectly applied to other products and in other regions. In addition, every elasticity is altered, often greatly, by a formula based on its share of a category of expenditure. That contradicts any underlying estimates, which are not based on expenditure shares. It also leads to bizarre results. For example, biofuels for fuel somehow lead to price decreases for electricity, which somehow lead to less electricity consumption.”

**Response:** Please refer to Master Response 2.

**R15b-8:** The commenter states, “• Without empirical basis, the model is programmed to prevent international land use change, which is where agricultural expansion occurs. It does so by using arbitrary assumptions to constrain trade in agricultural products. The resulting predictions are provably wrong because this leads the model to predict large price differences

for crops in different parts of the world, which do not occur in reality. Because global prices of grains and vegetable oils are highly linked, changes in demand will have global effects leading to heavy cropland expansion in the Tropics, where it is cheapest.”

**Response:** Please refer to Master Response 2.

**R15b-9:** The commenter states, “Because CARB’s emissions estimates are dependent on GTAP, it lacks an empirical basis for encouraging their use. Faced with this evidence, an argument can be made that CARB should immediately stop incentives for at a minimum crop-based biofuels. At a minimum, CARB should undertake a quick review.”

**Response:** Please refer to Master Response 2.

**R15b-10:** The commenter states, “Second, as also discussed in the attached paper, the ILUC estimates generated by GTAP are only around 10% of the average carbon losses from vegetation and soils that have occurred to generate the cropland used to produce the quantity of corn used in corn ethanol or the quantities of vegetable oil used in any form of biodiesel or renewable diesel.(Timothy D. Searchinger et al. 2018). (These calculations adjust generously for by-products and co-products.) In other words, if the additional corn or vegetable oil used for biofuels is replaced on the average type of land used to generate these products globally and at the average global yields, the land use emissions will be roughly ten times the ILUC estimates used by CARB. If the ILUC emissions are even around 20% of this average, the emissions reductions estimated by CARB will disappear. In the absence of compelling economic evidence that the sources of supply will be overwhelmingly lower than the global average land use source to the present date, these biofuels cannot credibly be viewed to lower emissions.”

**Response:** Please refer to Master Response 2.

**R15b-11:** The commenter states, “Third, even if the GTAP model were correct, the resulting policy is morally indefensible. As revealed even in the publication by the GTAP authors (Hertel et al. 2010), but also shown separately in (T.D. Searchinger et al. 2015), the ILUC number for ethanol is much lower because GTAP estimates much of the food diverted to biofuels is not replaced due to higher crop prices. As shown in the latter paper, the literal physical source of the emissions reduction is people and livestock around the world eat less carbon and therefore emit less carbon dioxide in their respiration. Global food prices primarily affect consumption by the global poor. California’s implicit policy, by using GTAP, is therefore to obtain greenhouse gas reductions by increasing global food prices so that the global poor consumed less. This is an indefensible position.”

**Response:** Please refer to Master Response 2.

**R15b-12:** The commenter states, “Finally, the use of economic models to estimate ILUC does not actually estimate the true climate costs of devoting land to biofuels. In effect, the ILUC estimate seeks to ask what are the climate effects if California enacts expensive policies to

make greater use of land for biofuels but there are no policies in the world to use land to achieve climate benefits in any other way. The true costs reflect the lost opportunity to use land in other ways to benefit the climate. These are the opportunity costs, and in economic terms, opportunity costs are costs, and that principle applies equally to climate effects as money or use of any other asset.

Land is an extremely valuable asset, with fixed global quantity, for the climate. The world needs both more food and more carbon storage. The proper measure in evaluating the costs of diverting land from food production is the quantity of carbon that could reasonably be saved by continuing that food production. And even if that food production were treated as surplus, the appropriate measure would be the quantity of carbon that could be removed from the atmosphere by reforesting “surplus” cropland. As discussed in the GTAP paper and in (T. D. Searchinger, Beringer, and Strong 2017), these alternative uses of land are vastly more valuable than using land for biofuels, even cellulosic biofuels. The best uses of U.S. corn land for climate purposes are to produce corn, but even if they were established in forest, they would reduce carbon for decades far more than biofuels. And the world faces challenges even of siting solar power. On three quarters of the world’s land, solar power will generate more than 100 times the useable energy, and when used to transport cars in electric engines, will generate more than 300 times the motion. On low productivity land, the ratio extends into the thousands. Overall, the world has no substitute for the use of well-watered land for food, forests and other carbon-rich native habitats. But the world has far more efficient alternatives for the generation of energy.”

**Response:** Please refer to Master Response 2.

**R15b-13:** The commenter states, “The academic literature has been moving broadly to recognize that the climate uses of land must be evaluated using some form of opportunity cost (see list in Appendix A). CARB should do so as well. And once it does so, it will conclude that the dedication of the productive capacity of land to produce biofuels is a poor use of land and has adverse effects on the climate.”

**Response:** Please refer to Master Response 2.

**Comment Letter R15c**

2024/09/30

Tim Searchinger, Senior Research Scholar, Princeton University

Dan Kammen, Director Renewable and Appropriate Energy Laboratory, University of California at Berkeley

Michael O’Hare, Emeritus Professor of Public Policy and Professor of the Graduate School, University of California at Berkeley

**R15c-1:** The commenter states, “Following a discussion regarding issues before this panel, Dr. Jason Hill suggested that we offer comments addressing biofuel lifecycle analyses and use summary sheets to make each point clear. Although one of us wrote the first widely cited ILUC paper for biofuels, the real issue identified by that paper was that biofuel lifecycle analyses

have treated the use of land as carbon-free, which means its biofuel use sacrifices no other carbon storage. This treatment has applied even to using forests and to highly productive farmland, whose use allows other land to store more carbon. Subsequent work showed that this approach resulted from an invalid assumption that biomass is “carbon neutral,” which in turn derived from a misinterpretation of IPCC national reporting guidance. This work also showed that economic models for ILUC are a poor method of estimating land use costs both conceptually and because of reliability constraints. However, direct methods are available to measure the carbon opportunity cost of using land, which are consistent with typical LCA analyses. Below is a list of the items covered.”

**Response:** The comment provides an introduction to the comments below. Please refer to Responses R15c-2 through R15c-22.

**R15c-2:** The commenter states, “The greenhouse gas costs of using biofuels primarily depend on the greenhouse gas costs of using land.

Biofuels are a way of using land to grow plants to replace fossil fuels. That is the greenhouse gas (GHG) benefit, which can be called the carbon benefit.

The carbon cost is not using land to produce plants for other purposes.

This cost can be either to store carbon directly, e.g., forests, or to meet food demands, which allows other land to store carbon.

Whether biofuels are beneficial or harmful from a carbon perspective depends on whether these benefits exceed the costs.”

**Response:** Please refer to Master Response 2 and 4. Considering the opportunity carbon cost of land as suggested by the commenter differs from the approach utilized for the CA-GREET4.0 model, and is considered out of scope for the proposed amendments.



**R15c-3:** The commenter states, “The standard biofuel LCA, by not counting the emissions released by burning or otherwise oxidizing biomass itself, treats land as carbon-free.

Standard Lifecycle Analysis of Biofuels (without ILUC)

| Source of fuel*   | Producing Feedstock (crude oil or crop) | Refining                | Tailpipe Emissions      | Fermentation emissions  | Total GHGs & % Increase for Biofuel <i>Without Plant Credit</i> | Credit for Plant Growth | Total GHGs & % Savings for Biofuel       |
|-------------------|---|-------------------------|-------------------------|-------------------------|---|-------------------------|--|
| Gasoline          | <b>+4.5</b>                             | <b>+8</b>               | <b>+73.3</b>            | -                       | <b>85.8</b>   | -                       | <b>85.8</b>                              |
| <i>EU Ethanol</i> | <del><b>+40</b></del>                   | <del><b>+21.2</b></del> | <del><b>+71.4</b></del> | <del><b>+35.7</b></del> | <del><b>168.3</b></del><br><b>(+96%)</b>                        | <del><b>107.1</b></del> | <del><b>+61.2</b></del><br><b>(-29%)</b> |

Greenhouse gas emissions and sinks (CO<sub>2</sub> eqv.) per mega joule of fuel  
Source: EU JRC

10

*Note: Illustrative LCA. Ethanol production emissions (producing feedstock & refining) vary by LCA. For CARB corn ethanol production emissions were 69; EPA projected production emissions for corn ethanol in 2022 were 49. JRC tailpipe emissions for ethanol differed from gasoline tailpipe emissions because of assumptions of cleaner burning engines.*

Fermenting starches into ethanol and burning the ethanol in the engine together release 150% of the CO<sub>2</sub> released by burning gasoline. The standard LCA for biofuels ignores this CO<sub>2</sub> on the theory that this release is balanced, i.e., offset, by the carbon absorbed by growing of the grain. (This is shown above by the crossed-out emissions numbers for combustion and fermentation and those from growing the crops. They are viewed as canceling each other out but are typically not shown in LCAs.)

Yet it takes land to grow grain (or any other plants). This standard LCA assigns no carbon cost to using land.

To illustrate this point, the LCA would be the same if the decision to produce biofuels caused new land to come into existence, which is obviously a very different circumstance. It also assigns no greater value to burning true waste biomass, which does not have a land cost, than to burning crops, which do. This standard LCA would even treat the production of a large quantity of biomass on degraded land as having no more value than diverting the output of the world's best farmland. Unless land is free from a carbon perspective, which means it has no carbon opportunity cost, this calculation therefore must be leaving something out.”

**Response:** Please refer to Master Response 5 and 2. Considering the opportunity carbon cost of land as suggested by the commenter differs from the approach utilized for the CA-GREET4.0 model, and is considered out of scope for the proposed amendments.

**R15c-4:** The commenter states, “Ignoring the cost of using land is incorrect as it ignores the fixed carbon cost of producing cropland to grow food, just like producing factories is a fixed cost of producing other goods.

Making cars generates emissions not just from the steel in the car and energy used in the factory, but also from the emissions to produce the factory. For a proper LCA, if the carbon cost of making the factory is significant, the LCA needs to estimate its emissions and amortize these emissions over the cars made. For the same reason when using crops, an LCA should estimate the emissions from producing cropland and then amortize them across the crops. Those emissions are the carbon losses from vegetation and soils in converting land to cropland.

For cars, the emissions of constructing a factory are relatively small, but for any crop (and therefore biofuel from the crop), the primary emissions are those from constructing the cropland. (Schmidinger and Stehfest 2012) (Hayek et al. 2021)(Searchinger et al. 2018).

By one estimate, the carbon lost from vegetation and soils, when amortized over 30 years of crop production, ranges from around 5x that of the production emissions for corn. The same ratio is 3x for wheat, and 23x for soybeans (Searchinger et al., Nature 2018). These estimated losses would be even higher using some other estimates of terrestrial carbon loss such as those in (Erb et al. 2018).”

**Response:** Please refer to Master Response 5 and 2. Considering the opportunity carbon cost of land as suggested by the commenter differs from the approach utilized for the CA-GREET4.0 model, and is considered out of scope for the proposed amendments.

**R15c-5:** The commenter states, “One direct way to estimate the land use costs of producing biofuels (its carbon opportunities costs) is to estimate the average carbon loss to produce the cropland to grow the crops that go into a biofuel. The land cost must also fully credit by-products. By this measure, the land use carbon costs alone are ~2x to ~3x the carbon saved from burning fossil fuels for grain-based ethanol and >3x the fossil fuel carbon savings of biodiesel from vegetable oil.

**Supplementary Table 4: Comparison of our Biofuel COCs with Economic Modeling for the European Commission and the California Air Resources Board (gCO<sub>2</sub>/MJ).**

| Biofuel            | Carbon Benefits (COCs) | GLOBIOM-EU | GTAP-CAL |
|--------------------|------------------------|------------|----------|
| Wheat ethanol      | 140                    | 23         |          |
| Corn ethanol       | 200                    | 9          | 55       |
| Sugarcane ethanol  | 110                    | 11         | 14       |
| Soybean Biodiesel  | 330                    | 100        | 27       |
| Rapeseed Biodiesel | 270                    | 43         | 13       |

|                    |     |     |    |
|--------------------|-----|-----|----|
| Palm oil Biodiesel | 260 | 230 | 71 |
|--------------------|-----|-----|----|

*Source: Searchinger et al., Assessing the carbon efficiency of land use change, Nature (2018). Carbon benefits (COCs) are the land use costs, comparable in some ways to ILUC in economic models. This table assumes amortization of land use costs over 30 years of biofuel production.*

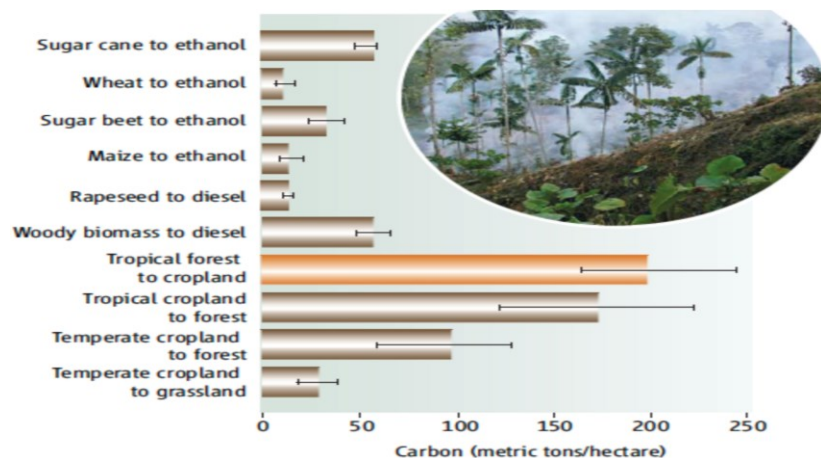
The typical way LCAs estimate the GHG costs of any item is to estimate the average GHGs emitted to produce it. The theory is that this calculation provides a reasonable, first-order estimate of the likely costs of producing another unit of that item. LCAs for biofuels typically do this calculation for every other element of producing biofuels, e.g., the emissions from mining & refining oil or of producing and using nitrogen. But the emissions from “producing” cropland are typically ignored altogether.

The calculations above follow the typical approach for LCAs by estimating the average carbon cost of producing the cropland used to produce each crop. It generously credits biofuel by-products and follows the U.S. approach of amortizing land-use emissions over 30 years.

One way to conceptualize this cost is that these would be the emissions from land use change if the consumption of the corn or vegetable oil for biofuels were to require new cropland that has the average global yield of that crop and whose conversion causes the same amount of carbon loss as the average conversion of land used to produce that crop in the past.

**Response:** Please refer to Master Responses 2 and 5. Considering the opportunity carbon cost of land as suggested by the commenter differs from the approach utilized for the CA-GREET4.0 model, and is considered out of scope for the proposed amendments.

**R15c-6:** The commenter states, “Another measure of biofuel land use costs is to calculate the carbon sequestration gain if land were allowed to reestablish native vegetation.



*Source: Righelato and Spracklen (2007)*

If land is assumed to be available for biofuels given other human needs, it must also be available to reduce emissions in other ways, including through reforestation. One way of evaluating the carbon land use cost of biofuels is to estimate the carbon sequestration that could be achieved by allowing the same land to regrow its native vegetation. Most cropland could regrow forests (even in the Midwest where forests now grow on abandoned land because large prairie fires are suppressed).

These calculations have a long history and are usually shown by comparing the per hectare GHG effect of allowing land to reforest versus using it for biofuels (Evans et al. 2015) (Righelato and Spracklen 2007)(Searchinger, Beringer, and Strong 2017). For at least crop-based biofuels, reforestation reduces emissions more, which means the carbon opportunity cost of using land for biofuels is higher than the benefit of replacing fossil fuels. (For cellulosic ethanol, the calculation depends on the yields and conversion efficiencies assumed.) In economics, opportunity cost is cost.

Introducing costs other than land into the opportunity cost analysis for carbon raises the cost of biofuels. The financial cost of using the same hectare for reforestation or biofuels is the same, but it is typically cheaper to plant a forest than to subsidize biofuel production enough to compete with gasoline or diesel. Given a major global focus on reforestation to address climate change, it makes little sense to value land at less than its opportunity cost to store carbon.

These calculations also generate a carbon land use cost per mega joule of ethanol (equivalent to typical ILUC calculations). This cost equals the quantity of carbon that could be sequestered per hectare, divided by the megajoules of biofuel that could be produced per hectare. This calculation also must account for by-products by assigning only a portion of the land use carbon costs to ethanol. In an example of 10 tons of corn per hectare, and 417 liters per ton, and with a 35% credit for DDG, the land use cost for ethanol is 80 gCO<sub>2</sub>/MJ. (Searchinger, Beringer, and Strong 2017) (Table 1). That is higher than the combustion emissions from gasoline alone. (This comparison ignores production emissions for both biofuels and gasoline, which are typically higher for biofuels.)

This calculation is simple and informative, but the carbon opportunity cost method described on the previous page has advantages because it recognizes that diverting higher yielding cropland is more expensive from a carbon standpoint than diverting lower yielding cropland.”

**Response:** Please refer to Master Response 2. Considering the opportunity carbon cost of land as suggested by the commenter differs from the approach utilized for the CA-GREET4.0 model, and is considered out of scope for the proposed amendments.

**R15c-7:** The commenter states, “ILUC is one (limited) way of estimating a land use cost. Low ILUC estimates mean using even the world’s most productive farmland has a very low carbon cost.

ILUC asks the question: how much carbon would be lost from the world's land to replace food diverted to biofuels? In that sense, it is one possible way of assigning a carbon cost to using land.

A low ILUC estimate means that even the world's best farmland is very, very cheap from a carbon perspective. For example, an ILUC of 20 g/MJ for corn ethanol from the U.S. means that carbon lost from the world's land of diverting 1 ton of corn will be only 10% of the average quantity of carbon lost from vegetation and soils in the past to generate the cropland used for 1 ton of corn today (see page 6). Estimates of 10 g/MJ are 5% of this global average.

Using the example on page 8, this 20 g/MJ for U.S. corn ethanol ILUC also means that the cost of diverting U.S. corn land is equivalent to only .75 tC/ha/y. That is roughly one quarter of the carbon that could probably be sequestered on that land by just allowing it to reforest. It is less even than the value of allowing that land to reestablish grass. (See references cited in supplement for Table 1 of Searchinger, Beringer & Strong [2017]).

By most estimates, highly productive farmland has high carbon value because it can help meet vastly rising demands for food without deforestation. Low ILUC estimates logically imply that this farmland has little actual climate value."

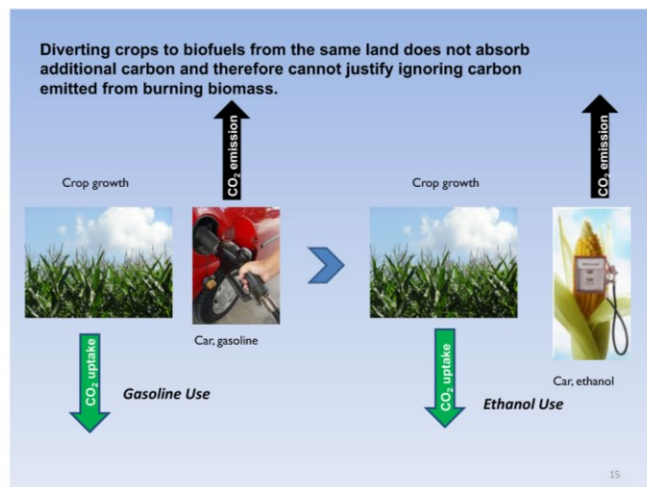
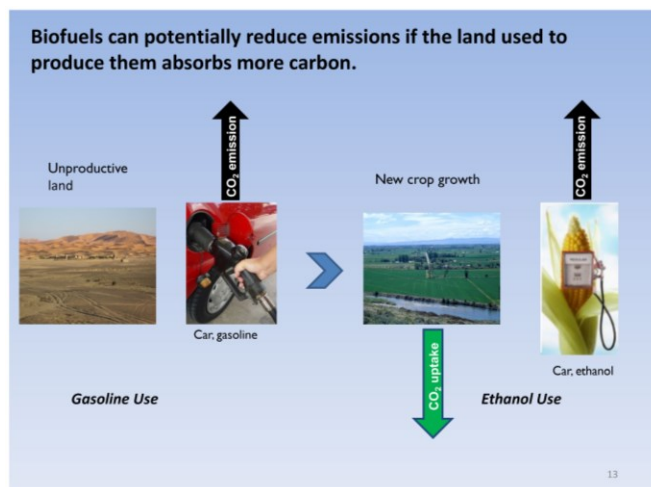
**Response:** Please refer to Master Responses 2 and 5. Considering the opportunity carbon cost of land as suggested by the commenter differs from the approach utilized for the CA-GREET4.0 model, and is considered out of scope for the proposed amendments.

**R15c-8:** The commenter states, "Although the assumption of carbon neutrality can be interpreted as treating land as carbon-free, it represents an accounting mistake that is based on a misinterpretation of national IPCC reporting guidance.

Page 5 shows that the standard LCA ignores the carbon emitted from the release of plant-based (biogenic) carbon, which has come to be called treating biomass as "carbon neutral." Page 5 explains that this decision in effect treats the land used to produce crops as having no carbon cost.

But this assumption of "carbon neutrality" is also a basic accounting error, which stems from a misinterpretation of IPCC national reporting guidance. The IPCC has said explicitly that its national reporting guidance does not mean that biomass is carbon neutral. The next few pages explain how the typical LCA approach is mistaken and where the error came from."

GHG reductions from biofuels (other than from waste) require additional plant growth and cannot justify treating existing crops from existing cropland as "carbon neutral."



Source: Searchinger (2010)

Burning biofuels does not reduce carbon emitted from energy combustion. Although people often think the benefit of biofuels results from reduced fossil emissions, those emissions are just replaced by emissions from burning biomass. What comes out of the car does not change.

At best, bioenergy is a way of using additional plant growth to compensate (offset) the emissions of CO<sub>2</sub> leaving the tailpipe. The top left slide illustrates. Unproductive land is turned into productive land and as the arrows show, the climate gain results from increased plant growth. Because the additional plant growth does offset the carbon released by burning biomass, it would be acceptable as a shortcut in this circumstance to ignore the emissions from biomass combustion.

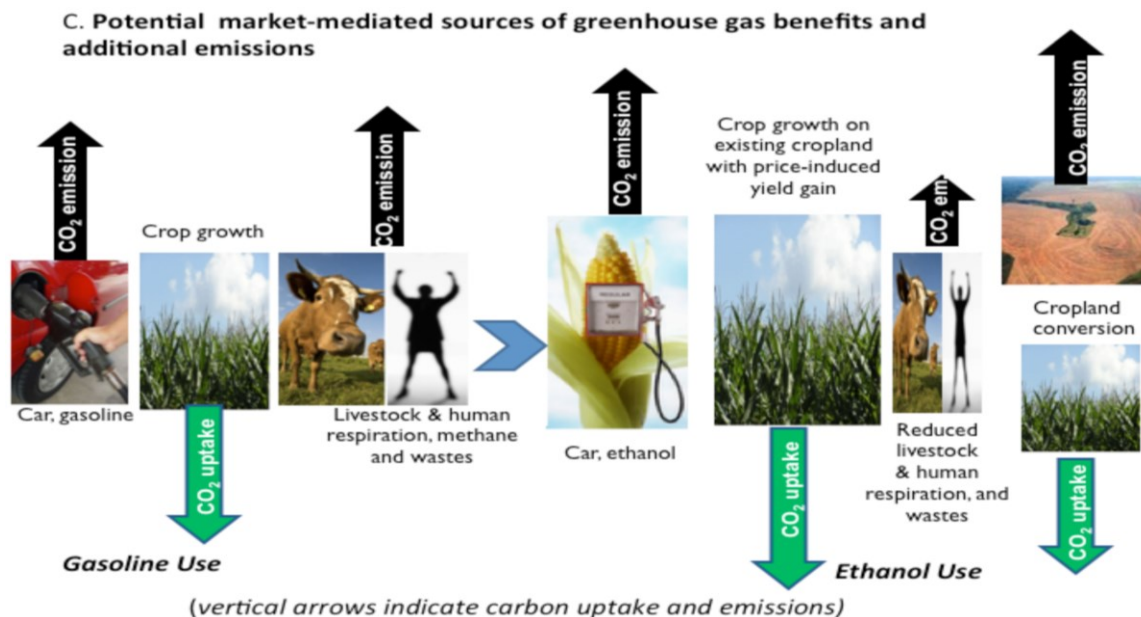
But as the right slide shows, if biofuels only divert crops from existing cropland where they were growing anyway, their growth cannot offset the emissions from burning the biomass because they would grow and absorb carbon anyway. The IPCC has agreed:

“If bioenergy production is to generate a net reduction in emissions, it must do so by offsetting those emissions through increased net carbon uptake of biota and soils”.  
IPCC AR5 WG III 11.13.4 (2014)

One might try to claim that because people and livestock would eat the crops and release their carbon through their respiration, using crops for biofuels is costless. But that is no more justified in the biofuel context than in any other LCA context. If any one person fails to pump a particular gallon of gasoline from the gas station, some other car will use that gasoline and emit that carbon. But LCAs don't treat gasoline as carbon free because they recognize that each person's consumption increases overall consumption. Biofuels similarly increase consumption of crops, and using the same approach as other LCAs, a biofuel LCA should assume they will be replaced.”

**Response:** Please refer to Master Response 5.

**R15c-9:** The commenter states, “Indirect land use analysis is not a search for climate costs but a search for climate benefits.



Source: (Smith and Searchinger 2012)

The graphic on the previous page illustrates that just diverting crops from existing cropland to biofuels does not absorb additional carbon from the air. It therefore does nothing by itself to compensate for (offset) the emissions from burning biofuels. If biofuels divert crops from existing cropland, they therefore cannot generate GHG savings from these “direct” effects alone.

Market-mediated effects, sometimes called indirect effects, provide the only potential for GHG reductions in this context. These effects are caused by higher crop prices triggered by the increased biofuel demand. As illustrated by a green arrow in the graphic above, beneficial climate indirect effects could include higher crop yields induced by higher prices, which absorb more carbon from the air. They could also include reduced food consumption, which literally results in reduced respiration of CO<sub>2</sub> by people and possibly livestock. The GHG cost (shown by the black arrows) comes from land conversion to replace the crops or livestock products. The higher the first two effects, the lower the ILUC. Low ILUC estimates rely on: (1) a large price-induced yield gain (gains above exogenous trends), (2) large reductions in food consumption, and (3) sometimes claims that productive new cropland will result from expansion into otherwise low carbon lands (discussed below).

An LCA that uses a model with a low ILUC is, in reality, physically attributing a GHG benefit to biofuels from these indirect effects. In effect, the carbon absorbed by increased yields on other lands and saved from reduced food consumption is attributed to the biofuel (See Searchinger et al. 2015 for a breakdown of different modeling results). These indirect effects, caused by higher crop prices, are the source of the benefits to biofuels in these LCAs. They are



analogous to attributing to one person's gasoline consumption the reduced emissions from the reduced use of gasoline by others due to marginally higher prices spurred by the first person's consumption.

This is important for two reasons.

- One, if only the direct effects of biofuels are counted when there is no direct land use change, there can be no GHG savings. It is common to think of the indirect, i.e., economic, analysis that goes into ILUC as a calculation of indirect costs. But in fact, this analysis is necessary to find benefits from crop-based biofuels. (A simple way of thinking about this is that biofuel use just burns one carbon fuel rather than another; the question is whether it leads indirectly to additional plant growth or reduced consumption by others.)
- Two, these potential biofuel benefits rely on behavioral change by others induced by higher crop prices. They do not result from reductions in emissions from energy combustion itself. Neither the biofuel producer nor the farm that provides the crops emits less carbon from energy combustion nor absorbs more carbon by increasing plant growth. Instead, in some LCA estimates, biofuel use contributes to GHG reductions by driving up crop prices, so others consume fewer crops or increase yields. LCAs typically do not count these kinds of effects, and a basic question for biofuel LCAs is whether they should."

**Response:** Please refer to Master Responses 2 and 5.

**R15c-10:** The commenter states, "The assumption of carbon neutrality is based on a misinterpretation of IPCC national reporting guidance.

For national reporting purposes, and only for national reporting purposes and only for practical reasons, the IPCC has very different rules for estimating emissions from the energy sector and the land use sector. In the energy sector, emissions are counted when fuels are burned (not mined). In the land use sector, as soon as a tree or other vegetation is removed, it must be counted (e.g., when mined), even though the carbon will be released elsewhere (e.g., in paper mills, sawmills, landfills etc.). This rule was designed to avoid the practical challenging of tracking biomass emissions throughout their use. The rule then had implications for energy accounting. Because biomass emissions are already counted as land use emissions in national reporting, to avoid double-counting in national reporting, countries do not count emissions from burning biomass in the energy account (Haberl et al. 2012) (Searchinger et al. 2009).

On a global basis, this rule means that harvesting biomass and burning it will be counted as releasing emissions on a global basis, and it is only on a global basis and only for reporting, not assigning emissions responsibility, that this rule ultimately works. In theory, all emissions from land use are counted. If a country harvests its own trees and burns the wood, it will report higher emissions due to lower carbon stocks in the forest. Even if woody biomass is exported



and the country burning it does not report the emissions, the carbon is counted globally because the country producing the wood reports this carbon in the land use account. The same rule works for liquid biofuels from existing cropland. If crops are diverted to biofuels and more land is used somewhere in the world to grow crops, the resulting emissions from land use change are counted somewhere.

This rule was never intended to work and does not actually work to assign emission responsibility to individual producers or consumers. The rule therefore does not work for regulations or carbon taxes imposed on factories. Even if the emissions are counted by some country in the land use account, that does not affect the individual producer or consumer burning the biomass. If the biomass is viewed as carbon neutral for them, they will engage in activity that increases emissions overall even if someone else counts the emissions.

This rule for national emissions also does not work in lifecycle calculations. The whole point of a lifecycle calculation is to count emissions wherever they occur related to the use of a product. That is why the IPCC has emphasized:

*“The IPCC approach of not including bioenergy emissions in the Energy Sector total should not be interpreted as a conclusion about the sustainability or carbon neutrality of bioenergy.”* (<http://www.ipcc-nggip.iges.or.jp/faq/faq.html>)”

**Response:** Please refer to Master Response 5.

**R15c-11:** The commenter states, “If low ILUC projections were correct, the broad literature focusing on the climate threat posed by global land use competition would be misguided and its solutions unnecessary.

An ILUC modeling analysis basically asks the question, what are the GHG consequences of increasing demand for a crop? The answer is the same whether the increase is for food or biofuels. A vast literature has focused on the large GHG implications of growing food demand (Tilman et al. 2011) (Tilman and Clark 2014) (Bajželj et al. 2014) (Springmann et al. 2018) (WRI 2019). Such global land use competition is a major concern of the recent IPCC land use report (IPCC 2019).

A low ILUC result means that increasing demand for crops for any purpose will cause little expansion of agricultural land because a variety of endogenous economic responses (yield intensification, reductions in demand) will intervene to keep agricultural land from significantly expanding. If that were true, the vast literature focusing on the land use importance of reducing meat and milk consumption or food loss and waste would be misguided.

The same applies to the literature expressing concerns about crop yields or calling for greater policies to increase yields to reduce the need to expand agricultural land. If ILUC is small, calls for expanded policies and R&D to boost yields would be mostly irrelevant because again endogenous forces would allow farmers to meet demands with little additional land use.

In simple language, low ILUC estimates mean land use problems will take care of themselves. They will do so regardless of exogenous policies that influence food demand or yields. Endorsement of low ILUC implicitly means that a vast array of scientific literature is based on false premises. That does not mean that a low ILUC estimate is wrong, but it does suggest that any low ILUC estimate should be based on extensive and convincing evidence.”

**Response:** The comment provides background information on ILUC and CEQA and does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required. **R15c-12:** The commenter states, “The following pages discuss recent ILUC modeling:

- There is no trend, let alone a valid trend, toward lower ILUC.
- Models projecting low ILUC make a variety of invalid assumptions that result in a low ILUC.
- The fact that most recent U.S. land conversion has been in grasslands does not imply a lower global ILUC.
- The empirical basis and underlying econometric analysis for global economic and land use models to estimate ILUC are extremely limited, so vast numbers of functions, parameters and decision rules are assumed.
- Even if ILUC models could be accurate, the types of economic rebound effects incorporated into ILUC models should not be used in lifecycle analyses and are not used in other parts of biofuel and gasoline lifecycle calculations or in LCAs generally.”

**Response:** The comment is introductory in nature and summarizes comments below. Please refer to the following responses.

**R15c-13:** The commenter states, ““Improved” modeling is not showing a trend toward lower ILUC.

A common recent claim has been that as economic models “improve,” there has been a trend to lower and lower ILUC for biofuels. The typical modeling results with low ILUC cited are various versions of the GTAP model run by modelers at Purdue and some outputs of the GLOBIOM model, which are discussed below.

The perception is understandable, but claims are not accurate. Many global land use models have projected high indirect land use change unless the whole world simultaneously imposes strict globally effective restrictions on deforestation and other land use changes. This is evident in results of the GCAM model at the University of Maryland (Wise et al. 2009), the EPPA model at MIT (Melillo et al. 2009), and the Magpie-Remind model at the Potsdam Institute (Popp et al. 2012), although these papers have not presented the results in an ILUC format.

Even models that have some low ILUC numbers, such as the GLOBIOM estimate for corn ethanol for the EU, have high ILUC numbers for some biodiesels.

A new paper accepted in PNAS (Lark et al., *Environmental Outcomes of the U.S. Renewable Fuel Standard*, accepted 2021), emphasizes this point. This paper, which we understand was recently described to the NAS panel, estimates a domestic ILUC only for corn ethanol of 39g CO<sub>2</sub>e /MJ.

The paper does not estimate an international effect, but its findings imply even larger international ILUC, which must be added to domestic ILUC. This paper estimates that the U.S. RFS has increased corn prices by 30%, and soybean and wheat prices by roughly 20%. All ILUC is ultimately caused by price effects, and U.S. price changes are closely correlated with global price changes (and often used to model effects of global prices). Because there is much more agriculture to respond to price increases outside the U.S. than inside the U.S., international land use effects of biofuel-induced price increases are likely to be substantially larger than the domestic effects. (The U.S. produces roughly 1/3 of global corn and soybeans and 6-7% of global wheat, and increases in these commodity prices will drive increases in other commodity prices as well through substitution.) A larger foreign ILUC is even more likely because the U.S. has a relatively closed agricultural frontier, while many other countries have extensive, potentially convertible land (Alexandratos and Bruinsma 2012).

Although the discussion below explains why no ILUC model can be truly reliable, a review of this new PNAS paper would find that it uses more rigorous economics and superior land use data to the other papers.”

**Response:** Please refer to Master Response 2.

**R15c-14:** The commenter states, “Low ILUC estimates in GTAP modeling reflect both estimates of harsh human consequences and built-in assumptions that make a substantial ILUC impossible.

Malins, Plevin, and Edwards (2020) highlight what the paper tactfully calls a “systematic optimism bias” in the GTAP modeling. This paper should be carefully read, but it may still understate three reasons for the very low GTAP ILUC results.

First, GTAP finds low ILUC in part because it claims large quantities of food diverted to biofuels will not be replaced. In the GTAP version for California for corn ethanol, that percentage was 50% (Searchinger et al. 2015)(Hertel et al. 2010). If the world doesn’t replace food, it doesn’t expand cropland. This result is arguably a worse result than ILUC (and unlikely at this level beyond the very short-term) because the poor are most sensitive to global food prices. As discussed more below, this consumption effect also should not be counted. One person’s consumption of a gallon of gasoline has market effects that cause others to consume a little less – and that may be important for policies -- but that does not cause LCA’s to assign gasoline lower emissions.

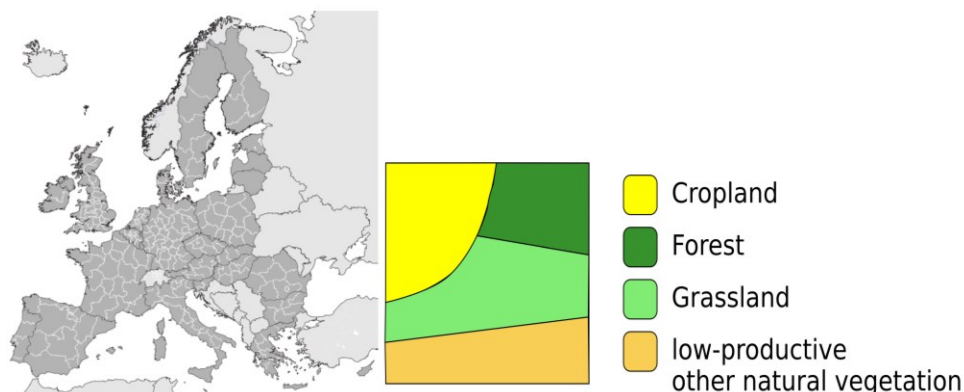
Second, assumptions built into the model structure make it difficult to project conversion of forests on a net basis. In recent GTAP runs, only 11% of the land converted to replace food comes from forest (Taheripour, Zhao, and Tyner 2017). Why? One reason is the model assumes all the world's land is managed, and that the quantity of wood supplied is based on the forest area. As a result, if forests are converted in one location, the demand for wood leads to reestablishing more forests in another location. The net effect is little clearance of forests. There is no empirical support for this view. There is abundant potential to supply more wood without planting new forests just by harvesting existing forests more as global forest wood stocks are increasing (Pan et al. 2011). Forests are also being cleared for agriculture all the time (Curtis et al. 2018) (Potapov et al. 2021).

Third, the model has been run using assumed elasticities that estimate that the intensification effect (the yield response) to price is the dominant source of new food. Malins et al. (2020) and Searchinger et. al. (2015) set forth the limited evidence for these assumptions. The existence of any net global yield response to higher prices is uncertain (as even any yield gains on some lands can be cancelled out by extensification in lower yielding areas or on lower yielding lands). But the evidence is strong that the vast majority of yield gains are exogenous. That is supported by trend line data (Malins et al. 2020) showing little change in yields with prices or other fluctuations, and by other evidence summarized in Searchinger et al. (2015) (see supporting information). Among other reasons, for decades after 1960, global food prices declined but yields increased. If yields were primarily driven by food prices, they would have declined.

As discussed below, the GTAP model makes that effect even stronger for pasture even as it admits to lacking an empirical basis for any yield-intensification effect. Combined with the qualities above, these assumptions mean that if pasture is converted, there is no knock-on effect in converting forests despite substantial evidence that this knock-on effect does occur (as discussed below)."

**Response:** Please refer to Master Response 2.

**R15c-15:** The commenter states, "The GLOBIOM model also has inappropriate assumptions that in effect create a pool of financially cheap, low carbon but highly productive land.



*Globiom model estimates that all land within large cells (left) has same productivity but has different existing uses and carbon stocks (illustrated by right), and financial costs. New production often comes on assumed category of highly productive, low carbon lands.*

In the GLOBIOM model, the supply function is based on an effort to estimate the lowest cost land anywhere in the world that might supply a new food item, such as crops to replace grain diverted to ethanol. GLOBIOM relies heavily on a crop model to estimate this cost, but that productivity cannot be estimated for every small piece of land. GLOBIOM therefore estimates the average productivity of land in homogenous land units that are large enough to include multiple different land use types, such as cropland, forest, pasture and other vegetation with limited carbon storage and no economic use.

Significantly within each homogenous unit, GLOBIOM estimates the same potential yield for all land classes. But GLOBIOM has cost estimates for using each type of land, and “other” land (with limited carbon) is cheap. Because this land is both cheap and equally productive of crops to adjacent cropland, the model often identifies this land as the cheapest source for new crop production. Through this assumption, the model creates a pool of potentially high-yielding cropland with little carbon stock, which is also financially cheap to use to supply new crops. Because the model is structured to select for this land, the result can be very low ILUC even if the model only creates a limited quantity of this land.

To analogize, imagine a model estimating that every employee in a hospital unit has the same capacity to provide medical care as doctors but recognizes that many employees in that unit have low wages. The model will estimate that these low-wage employees will supply expanded medical care, which makes the cost of expanding medical care low.”

**Response:** Please refer to Master Response 2.

**R15c-16:** The commenter states, “A fundamental limitation of ILUC calculations is that the economic analysis of the underlying economic relationships, and even the necessary data, are too limited to generate reliable global land use projections.

Economic land use models purport to evaluate global changes in land use factoring in changes to large numbers of different agricultural products, each in scores of countries or at least a

dozen major regions, using explicit or implicit land use supply elasticities, yield supply elasticities, demand elasticities, cross price demand and supply elasticities and trade relationships for each. Only a small fraction of these parameters have been empirically estimated, and of those that have been estimated, very few use rigorous econometrics, e.g., IV methods. At best, an elasticity for one food in one country may have some empirical basis, and it is applied to another country or to another food, but there is every reason to believe that supply elasticities in particular should vary greatly between countries and among foods. Although substitution between foods is claimed to be an important contribution of these models, there are no or almost no empirically derived cross-price elasticities. Those cross-price elasticities (often only implicit) are instead set by assumptions built into the model functional forms.

Even if all the parameters were rigorously derived, the uncertainties in each would multiply across such a vast number of parameters and functions. If these elasticities were properly derived, they would have standard deviations. The ultimate results, when properly factoring in these uncertainties, would likely have such a large statistical range as to be useless for policy. Moreover, functional forms chosen only for different mathematical purposes have vast effects. See discussion in Searchinger et al. (2018) (including supplement).

Not surprisingly, when global land use model results are compared, they generate a broad range of results (Schmitz et al. 2014). These results may be even broader than the results that different experts would generate using a simple spreadsheet.

As discussed above, this lack of reliability is not a reason for treating land as a carbon-free asset, which is equivalent to treating biomass as “carbon neutral.” Instead, the cost of using land can be estimated the same way LCAs estimate the cost of any other input, which is the emission cost of producing it. There is no more reason to use an economic model to estimate the costs of using land than there is to use economic models to estimate any other part of an LCA biofuel analysis.”

**Response:** Please refer to Master Response 2.

**R15c-17:** The commenter states, “The lack of sound data or analysis of econometric relationships for livestock production on grazing land alone precludes use of global, economic land use models.

Two thirds of global land is pasture, and 40% of that pasture came from forest or heavily wooded land (Searchinger et al. 2018). Livestock grazing systems have widely varying productivities (Herrero et al. 2013). Although there is large potential to intensify many grazing systems, the low cost of clearing forest often makes doing so more economical. Pasture conversion is the dominant source of tropical forest loss in the Amazon, for example (Skidmore et al. 2021), and has been a dominant source of tropical land use change and across the tropics generally (Gibbs et al. 2010).

There are no, or virtually no, properly econometrically estimated relationships for what are likely to be the marginal sources of new ruminant outputs.

The uncertainties in underlying data regarding livestock production systems, and even just pasture area would make any such estimate unreliable. Pasture area estimates range by hundreds of millions of hectares (Fetzel et al 2017). Although estimating gross conversion of forest to pasture is do-able, it is very difficult to estimate net changes in pasture area from satellite images. FAO data on pasture area is also highly unreliable (Searchinger et al. 2019), and as shown by a just published paper, even often unreliable for cropland (Potapov et al. 2021).

To illustrate the importance, the recent GTAP model runs project much conversion of pasture but virtually no knock-on effects in moving pasture into forest. A number of papers have found large knock-on effects in Brazil, some even more than 1 to 1 (Arima et al. 2011)(Lapola et al. 2010). The GTAP model avoids that by including a large intensification effect in pasture – even larger than for crops -- but concedes this estimate does “not have an empirical basis.” Malins et al. (2020) (quoting a GTAP paper). Actual results will be highly variable by livestock system and even within parts of countries. As a result, this pure assumption in GTAP has very large effects in reducing estimates of land use change.”

**Response:** Please refer to Master Response 2.

**R15c-18:** The commenter states, “Evidence that agriculture in the U.S. is expanding into grassland rather than forest does not demonstrate that earlier ILUC estimates are too high.

The proper method of estimating a land use cost should be based on some opportunity cost method, not an economic model. Regardless, recent evidence that U.S. agricultural expansion is mainly occurring in grasslands in the U.S. provides little evidence by itself that ILUC is lower than estimated in (Searchinger et al. 2008).

One reason is that conversion of pasture to cropland can be very costly from a land use perspective. Pasture produces less food than cropland, but pasture is the dominant way of producing beef. Even in the U.S., calves are overwhelmingly produced on pasture and are responsible for at least half of the ultimate land use for beef because producing calves also requires sustaining the mother cow. When pasture is lost in one location, unless that leads to lower beef consumption or intensification, that will require expanding pasture into forests or woody savannas somewhere. Pasture expansion has been a dominant source of land use change in Latin America (Aide et al. 2013). It remains the overwhelming immediate driver of land-clearing in the actual Amazon (Skidmore et al. 2021). While it is possible there may be some endogenous intensification effect to rising demand globally for livestock production, there is no true econometric evidence showing that.

Although there is no truly good econometric analysis of the effect of converting pasture in one location on expansion of pasture in another, there are papers that find a large effect in Brazil (Arima et al. 2011) (Lapola et al. 2010). By far the most rigorous, relevant paper is one that

uses highly advanced economic methods to examine the long-run effect of changes in effective prices using such instruments as roadbuilding (Araujo, Costa, and Sant' Anna 2020). It finds a high land use elasticity in response to changes in cattle prices, with a 1.67% decline in forest for each 1% increase in cattle prices. (It also finds a very high elasticity for cropland area expansion with respect to price.)"

**Response:** Please refer to Master Response 2.

**R15c-19:** The commenter states, "A major limitation of economic models is the lack of long-run elasticities. Although incomplete, best evidence suggests long-run land expansion in response to demand changes is much higher than short-run.

To the extent economic models incorporate estimated elasticities, they are nearly all short-term, meaning they examine changes in supply or demand responses typically on time periods of one year or so. For a persistent change in demand, such as more biofuels, longer term responses are needed, but it is hard to estimate them rigorously. Proper econometrics require persistent, measurable instruments that change demand consistently over time but that do not independently influence supply (except through demand) or vice versa.

In general, most longer-term elasticities are higher than short-term elasticities, but what matters for estimating land use change is the relationship of the land supply elasticity to the demand elasticity and to any yield-intensification elasticity. That ratio is what determines how much land use change will occur for an exogenous increase in demand for crops, such as a biofuel policy. Based on common sense, it seems likely that more of the overall supply response for land use will occur after a few years – that the land supply elasticity will grow more over time than the demand elasticity and the supply elasticity for yields -- because it often takes time to clear and plant new land while other responses, such as more inputs, can occur within a year.

Illustrating this effect, recent runs of the GTAP model assume that a large effect will be that farmers plant two crops per year on more land (increasing cropping intensity). This assumption is based in part on claims in a paper by Babcock that the U.S. appeared to have increased its double cropping as crop prices rose with ethanol around 2010-12. Yet for the last five years, U.S. double-cropping has been the lowest it has been since 1980 (less than 2% of cropland) (<https://www.ers.usda.gov/data-products/major-land-uses/major-land-uses/#Summary>). That is true even though biofuel demand did not go away. Other sources, such as land expansion, must therefore be supplying the additional crops for ethanol.

Other claims regarding increased cropping intensity also turn out to be invalid 1 As yields have not grown faster than trend lines (Malins et al. 2020), the evidence is that ethanol has come from expansion of corn acreage, matched in part by declines in acres of wheat and other crops (Lark et al. 2021), which suggests that much of the crop replacement is abroad.



Two analytically advanced studies have found much larger long-term land expansion elasticities than short-term elasticities either for corn in the U.S. or for agriculture in general in Brazil (Araujo, Costa, and Sant' Anna 2020) (Scott 2014)."

**Response:** Please refer to Master Response 2.

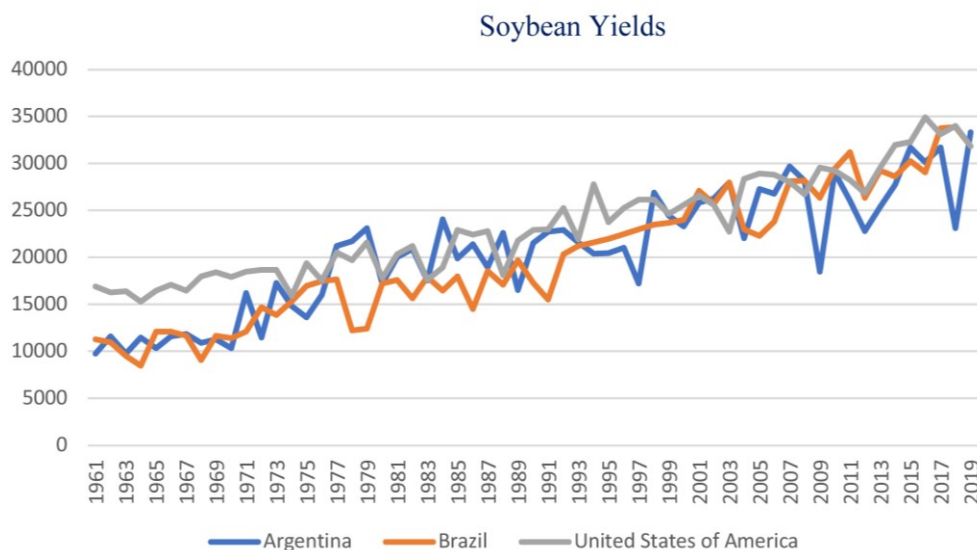
**R15c-20:** The commenter states, "Even if ILUC models could be accurate, the types of economic rebound effects incorporated into ILUC models should not be used in lifecycle analyses and are not used in other parts of biofuel and gasoline lifecycle calculations or in LCAs generally.

Every time one person increases consumption of a gallon of oil, there is a marginal global increase in the price of fossil fuels, and there are negative feedback effects that lead others to consume less. By some estimates these are substantial. Correlatively, one person's decrease in consumption of oil leads to increased consumption by others. These implications can be useful in other ways for policy because they can alert policymakers to the risks that policies to curb oil consumption must be systematic. But they are not useful for LCAs, whose goal is to inform decisions about whether it is good, and if so by how much, to reduce oil consumption in general. That is why LCAs do not usually attempt to estimate these changes in consumption by others and attribute them to the cost of burning a gallon of oil. LCAs count the emissions from burning a gallon of oil instead by the actual physical emissions of that combustion. Among other reasons, these effects on others can be cancelled out by changes in taxes or other policies.

The GHG consequences of using any product is separate from the GHG consequences of that use on other products. If you drive a Prius, that car still generates emissions, which can be calculated, even though the effect may be to reduce emissions compared to driving an SUV."

**Response:** Please refer to Master Response 2.

**R15c-21:** The commenter states, "Endorsement of low ILUC values could lead to dramatic tropical deforestation from biodiesel.



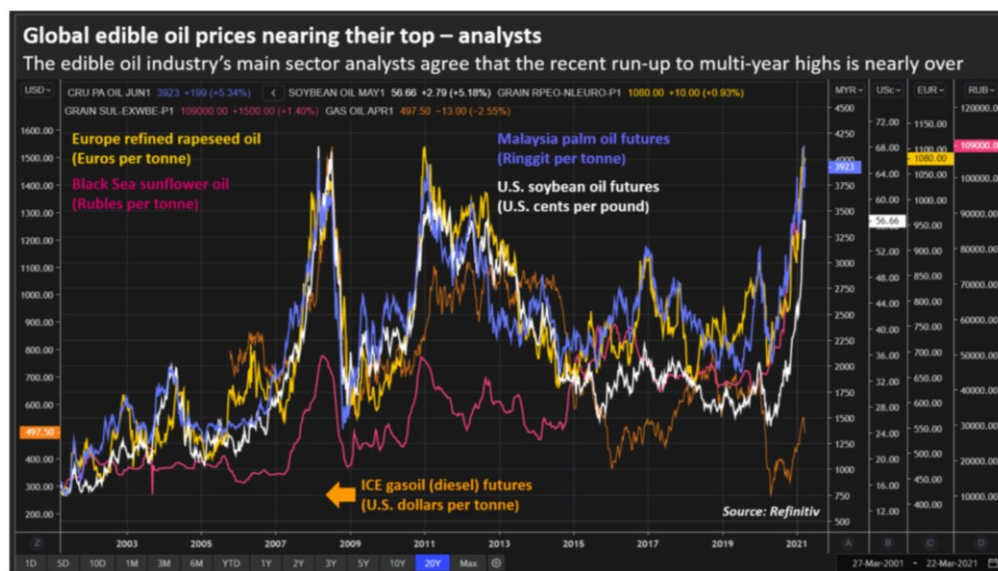
A recent agreement in the U.S. calls for airlines to increase their use of low carbon aviation fuels, fuels deemed to have at least a 50% reduction in emissions relative to fossil fuels. The most easily used aviation biofuel would be biodiesel from some vegetable oil. U.S. EPA regulations deem biodiesel to have more than a 50% reduction in emissions relative to diesel due to low ILUC estimates. Due to the relatively low yields of vegetable oil, by contrast, the average carbon loss to produce the vegetable oil that goes into biodiesel is 3x the saved emissions from diesel over 30 years (See page 6).

The vast majority of new vegetable oil, which has doubled in less than 20 years, results from expansion of soybeans and palm oil (FAOSTAT, shown <https://www.statista.com/statistics/263933/production-of-vegetable-oils-worldwide-since-2000/>). Both have been shown to be large drivers of tropical deforestation. In recent years, 40% of the increased demand for vegetable oil has come from expanding demand for biodiesel. Palm oil is the largest vegetable oil. Its global yields have not been growing at all. Soybean oil is the other major source, and as shown in the figure, there is no evidence that soybean yield growth rates have accelerated. These facts suggest that land expansion is the source of new vegetable oil.

By 2050, global aviation is expected to require 230 billion gallons of aviation fuel per year ("Sustainable Aviation Fuel: Review of Technical Pathways" 2020). Global production of vegetable oil is roughly 57 billion gallons (roughly 200 million metric tons). If even half of aviation fuel comes from vegetable oil, that will require a tripling of global vegetable oil production. Even without aviation biofuels, biodiesel policies for surface transportation already aim to almost double the global demand for palm oil and increase the demand for soybean oil by 75% (Malins 2020)."

**Response:** Please refer to Master Response 2.

**R15c-22:** The commenter states, “The widely varied ILUC estimates in some models for biodiesel from different vegetable oils contradict simpler, convincing economic evidence and highlights these models’ weaknesses.



(Chu and Maguire 2021)

World prices of vegetable oils are closely related. Although there can be some short-term stickiness, the correlations even over a year are close and over multiple years, extremely close. This relationship over many years provides strong evidence of sufficient substitution in both demand and supply among oils that increases in demand for any one oil will quickly translate into comparable increases in the prices of all vegetable oils.

Land use change spurred by demand results from changes in prices. If prices of vegetable oils are strongly related, the land use change should be similar regardless of which vegetable oil is used for biodiesel. ILUC for biodiesel from all vegetable oils should therefore be very similar.

Some ILUC models, by contrast, provide widely varying estimates. As shown on page 7, the GTAP modeling for California estimated that palm oil caused 5.5x the emissions from land use change as rapeseed oil and 2.6x the emissions from soybean oil. For GLOBIOM, the estimated ILUCs range by a factor of ~5. (GLOBIOM also estimates ILUC for biodiesel at roughly 3 times the rate of GTAP model runs for California regardless of the oil.)

The implicit claim must be that these models have some source of sophisticated economic analysis to justify these wide differences. They do not. None of these models utilize econometrically estimated cross-price elasticities. The model differences instead result from implicit substitution elasticities generated by the functional form of the model and added trade rules. In short, there is no econometric input to these models that overrides the simple but compelling evidence that increased demand for one vegetable oil means increased demand for all vegetable oils.

To clarify, it is possible and even likely that expansion of any one vegetable oil might cause more emissions from land use change than another. But if an increase in demand for any vegetable oil translates into a similar price increase for all, a similar mix of vegetable oils will increase to meet the rising demand for vegetable oil overall regardless of which oil is used for biodiesel. As a result, the ILUC will be similar.

Conveniently, Europe's estimates are best for European vegetable oil, and U.S. estimates are best for North American vegetable oil sources while Indonesia is convinced of the benefits of its own palm oil. Economic models with this level of unreliability cannot be good bases for policy."

**Response:** Please refer to Master Response 2.

**Letter attachments:** This letter included the following references: "Evaluating the Economic Basis for GTAP and Its Use for Modeling Biofuel Land Use", Annotated "Analysis of Use of GTAP for ILUC Estimates, CV for Timothy D. Searchinger and CV for Steven Berry. None of the attachments raise significant environmental issues related to the analysis in the Recirculated Draft EA and therefore these attachments are not included in this response to comments, and no response is necessary.

**Comment Letter R16**

2024/09/30

Joshua Wilson

**R16-1:** The commenter states, “POET appreciates the opportunity to provide comments on the California Air Resources Board’s (“CARB”) August 16, 2024, Recirculated Draft Environmental Impact Analysis (“Recirculated DEIA”) for the Proposed Low Carbon Fuel Standard (“LCFS”) Amendments (“Revised Proposed Amendments”). POET has participated actively in CARB’s ongoing rulemaking and submitted detailed comments on its own behalf and as part of a coalition on February 20, 2024, regarding the Amendments initially proposed in December 2023 (“Original Proposed Amendments”), and the Draft Environmental Impact Statement that was published in conjunction with the Original Proposed Amendments (“Original DEIA”). POET attended the LCFS rulemaking workshop held on April 10, 2024, and submitted written comments regarding the matters discussed and presented during the workshop. POET also submitted comments on August 27, 2024, in response to CARB’s August 12, 2024, Revised Proposed Amendments.

As the global leader in biofuels and California’s leading bioethanol supplier, POET has been a key supplier of LCFS credits, meeting the program’s incentives to lower the carbon intensity (“CI”) of its fuel and delivering greenhouse gas (“GHG”) reductions and public health benefits to the State of California. We write to express our concerns with CARB’s analysis of environmental impacts associated with the Revised Proposed Amendments. Although the Recirculated DEIA includes a revised project description and updated air quality and GHG evaluations in light of the Revised Proposed Amendments,<sup>1</sup> CARB’s environmental impacts analysis remains deficient under the California Environmental Quality Act and the California Administrative Procedure Act.

**I. Background on CEQA**

The California Environmental Quality Act (“CEQA”), enacted in 1970, requires state and local agencies to assess the environmental impact of proposed projects before making decisions.<sup>2</sup> CEQA mandates that agencies identify and disclose significant environmental impacts, consider feasible alternatives, and implement mitigation measures to reduce or avoid adverse effects when possible.<sup>3</sup> CEQA requirements include the preparation of an initial study and then either an Environmental Impact Report (“EIR”), or a Negative Declaration if no significant impact is found, ensuring that environmental considerations are integrated into the governmental decision-making process.<sup>4</sup>

CARB is subject to a regulatory program certified by the Secretary of the Natural Resources Agency<sup>5</sup> that exempts it from certain CEQA requirements, including but not limited to preparing environmental impact reports, negative declarations, and initial studies.<sup>6</sup> However, courts have emphasized that “[c]ertification of a program is effectively a determination that the agency’s regulatory program includes procedures for environmental review that are the functional equivalent of CEQA.”<sup>7</sup> CARB actions “remain subject to other provisions of CEQA[.]”<sup>8</sup> including CEQA’s requirements as to the scope of an environmental assessment.<sup>9</sup> Accordingly, a CARB

Environmental Impact Analysis (“EIA”) is the “functional equivalent” of an Environmental Impact Report (“EIR”) under CEQA.<sup>10</sup>

Pursuant to its regulations implementing the certified regulatory program, CARB is required to prepare an EIA pursuant to CEQA if the agency determines that “any aspect of [a proposed rule of policy], either individually or cumulatively, may have a significant effect on the environment[.]”<sup>11</sup> In the EIA, CARB must discuss and evaluate the proposal’s environmental impacts, including cumulative and growth-inducing impacts, consider a reasonable range of alternatives to the proposed project, and examine feasible mitigation measures to minimize significant adverse impacts.<sup>12</sup> An EIA meets these requirements when it provides enough “facts from which to evaluate the pros and cons” of a project<sup>13</sup> and sufficient information to allow for informed public participation.<sup>14</sup> To determine whether an effect on the environment is “significant,” CARB must evaluate how a proposal may interact with existing regulatory frameworks and examine the overall cumulative effects of the proposal.<sup>15</sup>

Although CARB need not consider “every conceivable alternative” to a project, the Agency must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.<sup>16</sup> CARB “may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency’s power would accomplish the goals of the agency’s action, and the [EIA] would become a foreordained formality.”<sup>17</sup>

## II. CARB’s DEIA Does Not Comply with CEQA.

To comply with CEQA, CARB’s certified regulatory program regulations require that the agency’s environmental analysis contain “[a] discussion and consideration of environmental impacts, adverse or beneficial, and feasible mitigation measures which could minimize significant adverse impacts identified,” as well as “[a] discussion of cumulative and growth-inducing impacts[.]”<sup>18</sup> Courts have emphasized that agencies must interpret this requirement to “afford the fullest possible protection of the environment.”<sup>19</sup> Further, because mitigation is a requirement under CEQA, it is critical that CARB assess any potential negative impacts of the proposal in sufficient detail that a mitigation plan can be accurately set forth.

In conducting an environmental assessment, CARB is required to consider a reasonable range of alternatives that “shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.”<sup>20</sup> An alternative is “feasible” if it is “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.”<sup>21</sup> Factors impacting feasibility include “economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, [and] jurisdictional boundaries[.]”<sup>22</sup>

**Response:** The comment provides background information on the commenter and CEQA and does not raise issues related to the adequacy of the EIA. Please refer to response to comment R16-8 for information about the reasonable range of alternatives considered in the EIA for the

Proposed Amendments. No changes to the EIA are required in response to this comment. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R16-2:** The commenter states, “As discussed further below, CARB failed to consider and properly evaluate environmental impacts associated with the proposed sustainability certification requirements, the proposed definition of waste feedstocks, and the increased demand for electricity and electric vehicles (“EVs”) that would result from the proposed LCFS program changes. CARB also failed to consider sufficient alternatives to its proposed LCFS rule.

**A. CARB Does Not Address Any Negative Emissions Impacts that Could Arise from the Sustainability Requirements.**

Neither the Original DEIA nor the Recirculated DEIA address any possible negative emissions impacts resulting from the sustainability requirements in the proposed LCFS amendments. Therefore, CARB did not properly analyze the environmental impacts of the proposed LCFS rule as required under CEQA and CARB’s certified regulatory program. CEQA requires an EIA to “reflect a good faith effort at full disclosure[.]”<sup>23</sup> Additionally, the agency must assess “reasonably foreseeable” significant environmental impacts.<sup>24</sup> In determining whether an impact is a “significant environmental impact” and must be assessed in the EIA, adverse economic or social effects “may be used as a factor in determining whether...[the impact] is significant.”<sup>25</sup>

Here, CARB did not make a good faith effort to disclose and assess all reasonably foreseeable significant emissions impacts resulting from the sustainability requirements in either the Original or Recirculated DEIA. As discussed in POET’s comment letter on the Original and Revised Proposed Amendments, it is reasonably foreseeable that the Proposed Amendments could result in less ethanol being blended into fuel, as the requirements would place additional costs on the ethanol supply chain. Lower levels of ethanol blending would result in increased PM and other pollutant emissions, in contravention of California’s goals to reduce levels of these very pollutants. Additionally, reduced ethanol blend levels in California would have significant adverse economic effects. Economic analysis has shown that blending ethanol with gasoline results in lower gas prices.<sup>26</sup> Lower ethanol blending in California would thus increase gas prices as ethanol volumes would be replaced with higher-cost fossil fuels. Additionally, the price of ethanol that remains in the California market likely will increase as the cost of complying with sustainability requirements is passed onto consumers. The economic impacts of complying with the sustainability requirements and increased gas prices resulting from reduced ethanol blend levels in California are significant environmental impacts CARB must address in its EIA. Yet, the DEIA fails to acknowledge or evaluate any potential downsides to CARB’s imposition of new requirements on biofuels.

Further, CARB’s system of penalizing biofuels that do not meet the sustainability requirements eliminates incentives for non-compliant facilities to reduce GHG emissions. If a biofuel facility fails to meet the sustainability requirements, all fuel shipped from the facility will receive a

default CI score equal to gasoline or diesel. As a result, a facility that does not meet sustainability requirements will have no incentive to reduce GHG emissions, as reductions will no longer receive a CI premium. This means that some biofuel facilities may abandon measures that currently reduce GHG emissions (in addition to foregoing plans for future emissions reductions), increasing levels of those pollutants. CARB's refusal to weigh these reasonably foreseeable impacts of its new requirements violates CEQA."

**Response:** Please refer to response to comment R13-7.

**R16-3: The commenter states, "1. CARB's DEIA Does Not Assess PM Emissions Impacts Associated with Lower Ethanol Blend Levels Resulting from the Sustainability Requirements.**

In response to public comment, CARB "reassessed and expanded" the air quality and GHG evaluations for the Modified Proposed Rule.<sup>27</sup> The Recirculated DEIA acknowledges that the substitution of low CI fuels, including biofuels, for fossil fuels "may result in reductions in criteria pollutants and air toxics. Lifecycle analyses of these alternative fuels (from production through their use as transportation fuel) shows that they have a lower carbon intensity and thus emit fewer GHGs on a lifecycle basis than fossil fuels[.]"<sup>28</sup> Despite this general recognition, the Recirculated DEIA does not acknowledge the PM<sub>2.5</sub> and other emissions reduction benefits of ethanol and the potential loss of those benefits due to the proposed amendments.

CARB states that the Modified Proposed Rule will achieve PM<sub>2.5</sub> and NO<sub>x</sub> reductions through 2046 in part due to "increased use of renewable diesel and alternative jet fuel[.]"<sup>29</sup> The Recirculated DEIA and Original DEIA mention that fossil fuels "contain benzene, toluene, ethyl benzene, and xylenes (BTEX compounds), which can be emitted into the air and contaminate soil and water. Gasoline engine exhaust contains benzene, 1,3-butadiene, formaldehyde, and acetaldehyde."<sup>30</sup> However, neither the Original nor Recirculated DEIA acknowledges that ethanol blending reduces these emissions. A recent study by Environmental Health & Engineering shows that increasing ethanol blends lowers BTEX, 1-3 butadiene, black carbon, and PM<sub>2.5</sub>.<sup>31</sup> For each 10% increase in ethanol content, primary PM emissions decrease by 15-18% on average.<sup>32</sup> In part, these emissions decreases are because ethanol is used to replace aromatics that are responsible for emissions of these pollutants. Aromatic levels decrease by about 7% for each 10% volume increase in ethanol.<sup>33</sup> Analyses by professors at Tufts University show that the associated health benefits may be most significant in disadvantaged communities in areas of high traffic density and congestion.<sup>34</sup> If less ethanol is blended into gasoline to replace aromatics, more pollutive aromatics will replace the ethanol. Effects of this increased pollution may be felt most strongly in disadvantaged communities. CARB fails to account for these impacts.

CARB also fails to account for inconsistencies between its goal to reduce PM emissions and its plans to penalize and disincentivize ethanol. CEQA requires CARB to discuss "inconsistencies between the proposed project and applicable general plans, specific plans and regional plans," which includes the State Implementation Plan ("SIPs") and plans for the



reduction of GHG emissions.<sup>35</sup> As discussed in POET's comments submitted in response to the December 2023 Proposed LCFS amendments, lower ethanol blending in California could result in higher emissions of PM and other pollutants. EPA recently tightened the PM NAAQS,<sup>36</sup> which will cause most of California to be in non-attainment for PM. In assessing environmental impacts under CEQA, CARB was required to but failed to address whether additional emissions resulting from potentially lower ethanol blending due to the sustainability requirements should be considered significant in light of the existing nature of air emissions problems in the area.<sup>37</sup>

## **2. CARB's DEIA Does Not Assess GHG Emissions Impacts Associated with Lower Ethanol Blend Levels Resulting from the Sustainability Requirements.**

CARB's Original and Recirculated DEIA do not fully recognize the GHG benefits of ethanol or assess emissions impacts of reduced ethanol sold into California as a response to the proposed amendments. Studies show that blending ethanol into the transportation fuel supply results in significantly lower lifecycle GHG emissions compared to petroleum-based gasoline. Emissions reductions attributable to bioethanol range from 41 to 46% compared to emissions associated with petroleum-based gasoline. According to the Department of Energy's Argonne National Laboratory ("ANL"), typical corn ethanol provides a 44% GHG reduction compared to gasoline.<sup>38</sup> Similarly, researchers affiliated with Harvard University, MIT, and Tufts University conducted a meta-analysis showing that corn ethanol as of 2021 offers an average GHG reduction of 46% compared to gasoline.<sup>39</sup> The California LCFS recognizes ethanol's emissions reduction benefits compared to gasoline: CARB's website indicates that ethanol currently has an average CI value of around 60 g/MJ under the LCFS.<sup>40</sup> E85 (gasoline blended with 51-83% ethanol) also has significant emissions and cost benefits that CARB failed to consider in its environmental analysis. E85 can only be used in flex-fuel vehicles ("FFVs"). California is the largest market of FFVs, and sales of E85 have increased in California in recent years.<sup>41</sup> In 2023, E85 usage in California reduced emissions by nearly 370,000 metric tons of CO<sub>2</sub>.<sup>42</sup> Increased costs associated with the sustainability requirements will result in reduced E85 usage. If ethanol volumes in California decrease and are replaced by conventional gasoline, California's GHG transportation emissions will increase. CARB's failure to address this potential impact of the sustainability requirements renders its DEIA insufficient under CEQA.

The Recirculated DEIA states that a possible compliance response to the Revised Proposed Amendments is "incremental improvements to ethanol production methods to reduce the CI of the fuel as the program benchmarks become more stringent. In addition, ethanol producers may choose to install CCS technology to further reduce their CI."<sup>43</sup> This brief discussion fails to analyze impacts of imposing sustainability certification requirements on ethanol's CI or the CI of gasoline-ethanol blends if the sustainability requirements lead to lower levels of ethanol blending. It also fails to recognize the ethanol industry's efforts to become a zero carbon and even carbon negative fuel. For example, the Recirculated DEIA acknowledges that over time, electricity production emissions will decrease as state clean energy and renewable electricity requirements approach.<sup>44</sup> However, the analysis does not recognize that ethanol is decarbonizing rapidly to meet the LCFS' emissions reduction requirements as well."

**Response:** Please refer to response to comment R13-7.

**R16-4: The commenter states, “B. CARB Improperly Assesses Environmental Impacts Associated with Its Proposed Definition of Waste Feedstocks.**

CARB’s analyses of environmental impacts are based on the predicted compliance responses the agency identifies.<sup>45</sup> In the Recirculated DEIA, CARB projects that one compliance response to the proposed LCFS amendments is that more cellulosic fuels will be sold into California.<sup>46</sup> However, CARB’s failure to exempt certain cellulosic feedstocks from the sustainability requirements are likely to undermine this projection.

CARB’s proposal excludes biomass listed in Section 95488.8(g)(1)(A) (“specified source feedstocks”) from the sustainability requirements.<sup>47</sup> Cellulosic feedstocks such as corn kernel fiber and corn stover are not included in this definition. As a result, these waste agriculture streams will have to go through the onerous process of sustainability certification, unlike the other waste products listed in Section 95488.8(g)(1)(A).

The sustainability requirements, then, may place a burden on cellulosic feedstocks (unlike other waste feedstock streams) that will discourage their use in California markets. Accordingly, CARB’s projected emissions reductions based on increased cellulosic fuel production are overly optimistic. Further, higher CI renewable fuels or gasoline may fill the void created by fewer corn kernel fiber ethanol sales, resulting in increased emissions and fewer LCFS credits available on the market. CARB’s environmental assessment fails to consider the impact of the narrow definition of waste feedstocks on cellulosic fuels like corn kernel fiber ethanol currently sold into California and overestimates growth in the cellulosic fuel market.”

**Response:** Please refer to response to comment R13-7. In addition, in the 2<sup>nd</sup> 15-day changes to the Proposed Amendments, staff specified that corn stover is not subject to the broad sustainability requirements of section 95488.9(g), and is instead subject to the specified source feedstock requirements of section 95488.8(g). Staff does not expect a change in ethanol consumption as a compliance response under the proposed amendments.

**R16-5: The commenter states, “C. CARB Does Not Discuss the Impacts of Increased Electricity and EV Demand Due to the Proposed Amendments.**

Under the proposed rule CARB expects that starting in 2030, electricity will outpace ethanol, renewable diesel, and RNG combined in LCFS credit generation.<sup>48</sup> Despite this, although CARB assessed the upstream impacts of these other fuels, it failed to conduct sufficient analysis of the potentially negative environmental impacts of significantly increased demand for electricity and EVs. Specifically, the DEIA did not sufficiently analyze the impacts of increased electricity generation and transmission or of EV battery production.<sup>49</sup>

The analysis in the Original DEIA was inadequate in its assessment of these issues in part because the Revised Proposed Amendments contained material changes with respect to the program’s demand for electricity. The Recirculated DEIA notes that the revised proposed CI

reduction requirements differ from the originally proposed CI reductions.<sup>50</sup> Specifically, the proposed CI reduction targets for years 2025 through 2029 are steeper than in the originally proposed LCFS amendments.<sup>51</sup> In the Recirculated DEIA, CARB also notes that the revised proposed LCFS amendments expand the fast-charging Infrastructure provisions, and that the LCFS proposed amendments likely will result in increased construction and operation of renewable energy production facilities and electric charging infrastructure.<sup>52</sup> Under CEQA, CARB must analyze all significant direct, indirect, and cumulative environmental impacts of the proposed rule, and it is clear that this rule will have direct, indirect, and cumulative impacts by incentivizing electricity use in electric vehicles and the manufacturing of those vehicles.

Because of the increased CI stringency and projected increase in energy demand, renewable energy production facilities, and EVs, CARB should have assessed a range of potential impacts regarding issues concerning electricity generation and transmission and EV battery production. CARB's failure to analyze the likely effects of this rule results in an inadequate DEIA because there are not sufficient "facts from which to evaluate the pros and cons" of a project<sup>53</sup> and there is not sufficient information to allow for informed public participation<sup>54</sup> under CEQA.

### **1. CARB Failed to Consider Impacts Related to Electricity Generation and Transmission.**

The incentives for increased transportation electricity usage could exacerbate existing challenges with the state's already overburdened electrical grid, leading to significant environmental consequences. California's grid is frequently under strain, especially during summer months when energy demand peaks due to high temperatures and air conditioning usage.<sup>55</sup> Increasing incentives for using electricity for transportation could further push the grid beyond its capacity and increases the likelihood of blackouts and brownouts. Without substantial and significant grid improvements, and a massive roll-out of new renewable energy development projects<sup>56</sup> (which as discussed below have their own environmental impact) California could face increased reliance on fossil fuel-based power generation during peak demand, potentially undermining the state's environmental goals by leading to higher GHG emissions. CARB failed to examine the potential environmental consequences of this scenario.

To avoid relying on inefficient fossil fuel power plants or building new fossil fuel power plants, California would need to undertake significant grid upgrades, expansions, and renewable energy development projects to manage the growing electricity demand. These types of developments, if they were actually feasible at all within CARB's timeline, would be both costly and environmentally disruptive. However, CARB did not include an assessment of these updates in the Original or Recirculated DEIA. CARB's Original DEIA states that the final EIA for the 2022 Scoping Plan Update is incorporated by reference into this EIA, but the Scoping Plan EIA does not sufficiently assess the feasibility and economic impact of grid expansions either.<sup>57</sup> CARB's Scoping Plan EIA states that electricity grid infrastructure expansion may be a compliance response to the Scoping Plan; however, the EIA does not assess in detail the feasibility of this expansion.<sup>58</sup> With regard to emissions impacts, for 100% of all cars sold in California to be EV's by 2035, assuming that about 1.6 million new cars are sold in the State each year,<sup>59</sup> and one EV requires about 4,320 kWh of energy each year,<sup>60</sup> this would mean

that by 2035, California would need to add nearly 7 billion kWh of energy to the already-stretched electric grid. A one-acre solar array generates between 350,000 to 450,000 kWh per year, so to generate the new electricity for the EV's that CARB expects to put online, California would need to build 17,500 acres, or 762,300,000 square feet of solar before 2035.<sup>61</sup> So even if this is a feasible endeavor, CARB must consider the environmental impacts of such large expansion—for example, threatened species of desert tortoise have faced habitat loss, fragmentation, and displacement due to solar farms.<sup>62</sup> CARB must also assess the environmental aesthetic impacts of such a significant expansion.<sup>63</sup> Under CEQA, CARB may not ignore the environmental impacts of the large-scale renewable electricity transition it anticipates, and, as with other transportation fuel types must assess the full environmental impacts of its proposal to develop a well-informed regulatory outcome and provide the public with the information needed to evaluate CARB's choices.

Additionally, California's grid is uniquely vulnerable to wildfires, which are often caused by faults in power lines and equipment during periods of high heat and dry conditions. Although the initial DEIA suggests that the proposal will have "less than significant short-term construction related and long-term operational impact on wildfire" CARB does not acknowledge or specifically assess the risks related to an overburdened electric grid in the Original or Recirculated DEIA. In the past, the state's utility companies have had to resort to Public Safety Power Shutoffs ("PSPS"), which involve shutting down large portions of the grid to prevent wildfire outbreaks. If EV adoption continues to surge without adequate grid upgrades, more frequent PSPS events could leave many EV users without a reliable means of transportation during critical times. This not only poses a safety risk but could also result in increased air pollution if people turn to backup generators powered by fossil fuels during outages. Furthermore, as EV charging often occurs at night, when renewable energy sources like solar power are unavailable, the grid may rely more heavily on natural gas plants, further eroding the environmental benefits of EVs by increasing carbon emissions during peak charging hours."

**Response:** As discussed in pages 29 and 30 of the Draft EIA, CARB expects that the total quantity of electricity used in electric vehicles will increase primarily as a result of the Advanced Clean Cars II, Advanced Clean Trucks, and Advanced Clean Fleets regulations. The Draft EIA identifies reasonably foreseeable technologies, low-carbon fuel types, and feedstock sources and compliance responses that could be developed as a result of these regulations. Reasonably foreseeable compliance responses related to electricity as fuel are summarized in page 30 of the Draft EIA, which include new renewable energy production facilities and electric charging infrastructure (e.g., new charging stations and associated buildings, underground or aboveground electric cables, and substations). The construction and operation of these compliance responses are considered in the analysis of the Draft EIA.

As discussed in Section 4.0A, "Approach to Environmental Impacts Analysis and Significance Determination," of the Draft EIA, the analysis is based on reasonably foreseeable compliance responses that are based on a set of reasonable assumptions. While the compliance responses described in the Draft EIA are not the only conceivable ones, they provide a credible basis for impact conclusions that are consistent with available evidence. Also, as

discussed in Chapter 2.0 of the Recirculated EIA, the evaluation of certain compliance responses would be speculative under CEQA. CEQA does not require evaluation of speculative impacts (Tit. 14, CCR § 15145). For that reason, an evaluation of effects of these responses is not required and is not included in this analysis. Grid improvements or the risks related to an overburdened electric grid would be too speculative to analyze.

**R16-6: The commenter states, “2. CARB Failed to Consider Impacts of EV Battery Production.**

The production of batteries for EVs, particularly lithium-ion batteries, has significant environmental consequences that CARB did not sufficiently address. EV batteries require a variety of metals, including lithium, cobalt, nickel, and graphite, the mining of which can have severe environmental and human rights impacts.<sup>64</sup> Lithium, for example, is extracted primarily from brine pools, the extraction of which involves pumping large quantities of water, which can deplete water resources in arid regions, threatening local ecosystems and communities.<sup>65</sup> Cobalt extraction frequently leads to soil degradation and water pollution.<sup>66</sup> Although CARB noted in the initial DEIA that “[s]ome of the recommended actions and associated compliance responses could require the extraction of minerals (e.g., lithium or platinum) used to manufacture fuel cell and battery technologies[,]” the DEIA cursorily concluded that “implementation of these measures would not substantially deplete the supply of lithium or platinum and both are currently used in auto manufacturing processes.”<sup>67</sup> In making this statement, CARB evinced a misunderstanding of CEQA’s requirements relating to environmental analysis. CEQA requires CARB to analyze the direct, indirect, and cumulative impacts of a government action. By suggesting that the proposed rule itself would not substantially deplete the supply of lithium or platinum, CARB ignores the cumulative effects of how the proposal may be compounded with other developments given the nature of the existing frameworks.<sup>68</sup>

Producing EV batteries is also an energy-intensive process. The manufacturing of a typical lithium-ion battery can result in significant carbon emissions due to the shipping and supply process as well as the manufacturing process—both of which are typically powered by fossil fuels. Although CARB acknowledges that “manufacturing facilities may be necessary to produce lithium-ion batteries” it does not address the increased carbon emissions related to this expansion. The materials used during manufacturing are also finite, which raises concerns about the long-term sustainability of mass EV adoption unless recycling infrastructure improves significantly.

Without these elements being raised and considered in sufficient detail in the DEIA, “meaningful assessment of the true scope of numerous potentially serious adverse environmental effects [is] thwarted.”<sup>69</sup> Specifically, without providing information on the environmental, including cumulative, impacts of increased mineral extraction, it is not possible to understand the costs and benefits of this proposal, as required under CEQA.<sup>70</sup>

**Response:** Please refer to Response to R16-5. Impacts related to production of EV batteries would be too speculative to analyze.

**R16-7: The commenter states, “3. The DEIA is Inadequate Because It Fails to Discuss the Environmental Impacts of Increased Electricity and EV Demand.**

Although POET understands that EVs are a significant component of California’s strategy to reduce transportation emissions, the environmental impacts related to EV production and grid integration must be clearly defined in the DEIA. The purpose of any DEIA is to provide CARB and the public with a full picture of the environmental impacts of the proposed rule and the alternatives. By failing to assess these impacts, CARB does not achieve the goals of CEQA. If CARB looks at the full picture of environmental impacts, this will further highlight the need for diverse alternative fuel options, including increased ethanol use, to achieve the California’s environmental goals.”

**Response:** Please refer to Responses to R16-5 and R16-6.

**R16-8: The commenter states, “III. CARB Did Not Assess a Reasonable Range of Alternatives.**

In conducting an environmental assessment, CARB “must consider a range of alternatives sufficient to permit the agency to evaluate the project and make an informed decision, and to meaningfully inform the public.”<sup>71</sup> CARB’s analysis regarding a reasonable range of alternatives “shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.”<sup>72</sup> An alternative is “feasible” if it is “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.”<sup>73</sup> Additional factors impacting feasibility include “economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, [and] jurisdictional boundaries[.]”<sup>74</sup>

Under CEQA, an EIA must consider alternatives that will “attain most of the basic objectives” of the project while avoiding or substantially reducing the environmental impacts of the project.<sup>75</sup> Assessments that omit these alternatives or that include an “inadequate discussion of alternatives” constitute an abuse of agency discretion.<sup>76</sup> At every step of the way, CARB’s alternatives analysis fails to meet these standards.

First, CARB fails to address the feasibility of its proposed approach, which involves emphasizing electrification while phasing out biofuels use. Likely because of this failure, CARB does not propose or analyze feasible CI reduction alternatives that would be more favorable to ethanol. For example, CARB does not evaluate whether it should use its own regulatory authority to approve E15, nor does it meaningfully evaluate elimination of the sustainability requirements, even though CARB admits that its current regulations already account for LUC.

In both the DEIAs and Scoping Plan EIA, CARB glosses over the significant grid infrastructure improvements and energy generation expansion that will be necessary to support the compliance responses from this rule (i.e., additional demand of at least 7 billion kWh) and does not grapple with whether this massive overhaul of the electric grid and energy generation is

feasible in the first place. As noted above, CARB provides no analysis of electric generation and transmission in the “additional infrastructure needs” section of the Recirculated DEIA,<sup>77</sup> and the Original DEIA bizarrely states that the LCFS will result in a reduction in energy demand.<sup>78</sup> Accordingly, CARB provides no detailed explanation on how the proposed rule, and the accompanying foreseeable compliance responses requiring increased electricity generation and transmission capabilities is “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.”<sup>79</sup> As discussed below, there are a range of alternatives that CARB did not consider that involve low carbon transportation options that would not require such a large-scale grid overhaul and would increase the feasibility of the proposal. These include providing CI credit for farming emissions reductions required under the sustainability requirements, eliminating the sustainability certification requirements, and considering higher ethanol blend levels.”

**Response:** As required by section 60004.2 of CARB’s Certified Regulatory Program, the EIA is consistent with Section 15126.6 of the CEQA Guidelines and addresses the selection of a range of reasonable alternatives. Section 15126(a) states the “EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives.” “[T]here is no ironclad rule governing the nature or scope of the alternatives to be discussed in an Environmental Impact Report (EIR or EIA in this case), other than the rule of reason.” (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 576; *In re Bay-Delta etc.* (2008) 43 Cal.4th 1143, 1162–1164; CEQA Guidelines, § 15126.6, subd. (a).)

In addition, section 15126.6(c) provides:

The range of potential alternatives to a proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

These guidelines were followed and complied with in Chapter 7 of the EIA, which addresses four alternatives: 1) Alternative 1: a no project alternative, 2) Alternative 2: Focused Crediting Scenario, 3) Reduce Project Stringency by Lowering Carbon Intensity Reduction target to 25% in 2030, and 4) Alternative 4: 40% CI Reduction Stringency in 2030 and Maximum Crediting Opportunities. Ultimately, the EIA presents a reasonable range of alternatives, evaluates their potential to achieve most of the basic project objectives, and evaluates whether the respective alternative would avoid or reduce the potentially significant environmental impacts of the Proposed Amendments in compliance with CEQA requirements.

**R16-9: The commenter states, “A. CARB Failed to Analyze Any Alternatives to the Proposed Sustainability Certification Requirements.”**

In CARB’s Original DEIA, CARB mentions the sustainability certification requirements in only one alternative, Alternative 4, where sustainability criteria would not be required. However, CARB does not discuss or evaluate any potential negative impacts resulting from imposing the sustainability requirements, including the potential lost PM, GHG, and other environmental benefits of ethanol. Indeed, CARB did not address or evaluate in any detail what environmental impacts would result from a “no action” scenario in which CARB did not adopt the sustainability criteria. Eliminating the sustainability requirements should be evaluated fully as an alternative. As a result, CARB’s evaluation of a program without the sustainability requirements is inadequate.

This is especially the case since CARB states in the Recirculated DEIA that LUC concerns (the primary reason for adopting the sustainability requirements) are already addressed in the current LCFS regulations. CARB admits that its current approach to addressing LUC is adequate, stating that the likelihood of LUC impacts resulting from biofuel demand “is at least partially (and potentially fully) accounted for by LUC scores added to crop-derived pathways.”<sup>80</sup> Furthermore, direct LUC is not a concern in light of the Environmental Protection Agency’s (“EPA”) analysis of direct LUC under the Renewable Fuel Standard. EPA uses an approach called “aggregate compliance” under which it monitors agricultural land annually to determine total agricultural land increases above a 2007 baseline.<sup>81</sup> If the 2007 baseline is not exceeded, EPA determines that new land outside of the baseline is not being devoted to crop production and direct LUC has not occurred.<sup>82</sup> In the most recent 2023 RFS rulemaking, EPA determined that the baseline was not exceeded and that no net direct LUC has occurred.<sup>83</sup> Because EPA already assesses direct LUC annually, LUC should not be a concern under the California LCFS. CARB must consider why moving forward with the sustainability requirements is wise given their superfluous nature.”

**Response:** Please refer to Response R16-8 and Master Response 2.

**R16-10: The commenter states, “B. CARB Failed to Include Readily Available Alternatives Within the Scope of Its Assessment.”**

While CEQA does not require the consideration of specific alternatives within the scope of an environmental assessment, the failure to consider readily available, feasible alternatives that



advance program goals while reducing costs is indication that the agency preparing the assessment has foreordained the outcome and that the assessment is therefore inadequate. In this case, CARB's failure to include at least two regulatory mechanisms (low-CI farming and E15 approval) in its assessment indicates that the environmental assessment performed by CARB is inadequate.

As discussed at length in POET's prior comments, CARB could award CI credit for carbon beneficial farming practices, either in conjunction with or in lieu of the sustainability requirements. The implementation of sustainable farming practices would reduce ethanol's CI by 56%,<sup>84</sup> and ethanol has historically been the largest or one of the largest sources of CI credits under the program. But CARB's DEIA does not assess the decarbonization potential of sustainable farming practices or discuss the possibility of crediting such practices as an alternative to the proposed sustainability requirements.

CARB fails to evaluate the approval of E15 within the scope of regulatory alternatives. The Recirculated DEIA does not assess ethanol blends beyond E10, assuming ethanol will "continue[] to be blended into gasoline at up to 10% by volume."<sup>85</sup> However, CARB is currently conducting a multimedia review of E15 for potential adoption and certification in California. The approval of E15 is entirely within CARB's control and could be accomplished in conjunction with the LCFS rulemaking. As discussed in POET's prior comments, E15 has significant air pollutant and GHG emissions reductions. A 2022 University of California Riverside study, funded in part by CARB, assessing the impact of E15 on air pollutant emissions for model year vehicles 2016 to 2021 was consistent with these results, finding that replacing E10 with E15 reduced PM emissions by 18%, with cold-start emissions being reduced by 17%.<sup>86</sup> CARB recently published a Multimedia Evaluation of E11- E15 Tier 1 Report with conclusions consistent with these studies.<sup>87</sup> Despite CARB's own involvement in the E15 regulatory process, the Recirculated DEIA does not even mention E15. CARB's failure to consider E15 as a program alternative, a regulatory measure that would reduce costs for consumers while increasing volumes of a critical source of CI credits, again demonstrates that CARB's analysis of alternatives was insufficient in scope."

**Response:** Please refer to Response to R16-9. Approval of E15 is out of scope for the proposed amendments to the LCFS regulation, which does not govern the fuel specifications approved for use in California.

**R16-11:** The commenter states, "**IV. Conclusion**

POET appreciates the opportunity to comment and looks forward to working with CARB to make the LCFS a continued success for California. If you have any questions, please contact me at Josh.Wilson@POET.com or (202) 940-6487."

**Response:** The comment provides a closing remark and does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment. The comments are noted.



**Comment Letter R17**

2024/09/30

Communities for a Better Environment

Lauren Gallagher, Attorney & Legal Fellow

**R17-1:** The commenter states, “Communities for a Better Environment (“CBE”) has reviewed the Recirculated Draft Environmental Impact Analysis (“DEIA”) prepared by the California Air Resources Board (“CARB”) assessing the 15-Day Changes to the Proposed Low Carbon Fuel Standard Regulation (“LCFS”) released on August 12, 2024.

CBE is a community-based environmental justice organization working with community members in East Oakland, Richmond, Southeast Los Angeles, and Wilmington. CBE’s mission is to build people’s power in California’s communities of color and low-income communities. CBE strives to achieve environmental health and justice by preventing and reducing pollution and building green, healthy, and sustainable communities and environments. In East Oakland, CBE members are impacted by emissions from Oakland International Airport and affected by emissions from jet fuel combustion. Spanning Northern and Southern California, CBE members in Richmond, Southeast Los Angeles, and Wilmington are affected by the toxic emissions from fossil fuel refining and increasingly biofuels refining. CBE members in Southeast Los Angeles and Wilmington are concerned about the impacts of rapidly developing hydrogen infrastructure across Southern California in general, and in their communities in particular. A common thread across our Northern and Southern California communities is advocacy at local, state, and federal levels to develop clean, accessible transportation that reduces impacts to the near-freeway communities where we organize. Emissions from both passenger and freight transport are among the greatest impacts experienced by communities in East Oakland, Richmond, Southeast Los Angeles, and Wilmington, who breathe diesel particulate emissions where they sleep, learn, play, and pray. With this working context, CBE raises significant concerns about the impact and analysis of changes to the proposed LCFS Regulation.”

**Response:** This comment is introductory in nature, with regards to the comment related to environmental justice, this is not an issue required to be analyzed in the EIA under CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R17-2:** The commenter states, “While CARB implements its own certified regulatory program under the California Environmental Quality Act (“CEQA”), it remains subject to CEQA’s requirements.<sup>1</sup> The recirculated DEIA for the proposal violates CEQA in several respects outlined below:

- I. The description of the proposed changes relating to fossil fuel-based hydrogen leaves out allowances for fossil fuel-based hydrogen production accompanied by book-and-claim accounting for biomethane, leading to faulty and inaccurate analysis of the impacts of the hydrogen rule changes.

- II. CARB fails to adequately examine the significant impacts of air quality, greenhouse gas emissions, and related health effects from the Proposed Changes regarding biofuels and hydrogen.
- III. CARB has surreptitiously dismissed feasible options within its authority to mitigate significant environmental and health impacts.
- IV. CARB has not sufficiently evaluated feasible alternatives that could lessen significant environmental impacts, in particular alternatives that involve a cap on biofuels.”

**Response:** The comment provides a summary of comments provided below. Please refer to Responses to R17-3 to R17-9.

**R17-3:** The commenter states, “**I. The description of the Proposed Change regarding fossil fuel-based hydrogen is inaccurate and cannot provide an adequate basis for impact analyses or mitigation measures.**”

The regulatory requirements for CARB’s Environmental Impact Analyses require the DEIA to include a description of the project and a description of the applicable environmental and regulatory setting for the project.<sup>2</sup> Even if CARB’s EIA analysis is limited, certified regulatory programs must align with CEQA’s policy goals and substantive standards.<sup>3</sup> Courts have described an accurate project description as “the heart of the EIR process” and “necessary for an intelligent evaluation of the potential environmental effects of a proposed activity.”<sup>4</sup> A project description that omits key information about regulatory allowances and exceptions will result in inadequate alternatives analyses and mitigation measures that do not address the significant impacts the proposed changes may have.<sup>5</sup> Further, it prevents the public from engaging with an accurate and accountable environmental analysis.<sup>6</sup>

In the description of the proposed amendment to the rule changes relating to fossil fuel-based hydrogen, CARB states that the Proposed Changes remove crediting eligibility for hydrogen produced from fossil fuels. However, the 15-Day Changes allow for the continued creation of fossil fuel-based hydrogen if producers use indirect accounting via book-and-claim biomethane matching.<sup>7</sup> This fundamental mischaracterization of the 15-Day Changes precludes an accurate and accountable environmental analysis because it does not capture the significant loophole for prolonged fossil fuel dependence that is indirect biomethane book-and-claim crediting. Without an accurate understanding of what the proposed LCFS allows, it is not possible for the analyses of impacts and mitigation measures to be adequate.”

**Response:** Staff disagrees that the project description mischaracterizes the provision phasing out fossil hydrogen in section 95488.2. Renewable hydrogen is defined in the LCFS regulation as, “hydrogen derived from (1) electrolysis of water or aqueous solutions using renewable electricity; (2) catalytic cracking, oxidation, or steam methane reforming of biomethane or other renewable hydrocarbons; or (3) thermochemical conversion of biomass, including the organic portion of municipal solid waste (MSW). Renewable electricity, for the purpose of renewable hydrogen production by electrolysis, means electricity derived from sources that qualify as

eligible renewable energy resources as defined in California Public Utilities Code sections 399.11-399.36.” Use of indirect accounting of biomethane to produce hydrogen qualifies that hydrogen as renewable under the existing definition, which staff did not propose to change in the proposed amendments.

**R17-4:** The commenter states, “**II. The Recirculated DEIA does not adequately address the impacts of the proposed rule changes.**

*A. CARB does not address the significant impact of air quality on health and environmental justice communities.*

CARB’s Regulatory Program and CEQA require that DEIAs disclose and analyze adverse impacts on human beings.<sup>8</sup> Health impacts resulting from adverse air quality impacts must be identified and analyzed. Ambient air quality and the presence of air toxins are obvious health concerns. Analysis of the health impacts resulting from adverse air quality impacts must disclose the severity and significance of those impacts. The DEIA should therefore analyze the impact of air quality on human health as well as disparate health impacts on disadvantaged communities and vulnerable populations.

The Recirculated DEIA only references the Health Impact Analysis in Chapter 2 of the Standardized Regulatory Impact Assessment (SRIA) issued on September 8, 2023. Despite the Recirculated DEIA’s new finding that short- and long-term air quality impacts of the proposed rule changes would be significant, the DEIA does not provide any new analysis about how the extent of these significant air quality impacts will affect the health of human beings.

It is clear from CARB’s own reasoning that they are well aware that the proposed changes will encourage renewable diesel to remain a substantial part of the LCFS program.<sup>9</sup> In fact, CARB projects that there will be an “increase in long-term operational NOx and PM2.5 emissions due to biomass and biofuel transportation as a result of the Proposed Amendments.”<sup>10</sup>

Concerningly, CARB is aware that the “air quality changes from the Proposed Amendments differ geographically based on fuel production and consumption patterns” and even anticipates “increases in local emissions associated with increased biofuel production and biomethane production.”<sup>11</sup> The Recirculated DEIA acknowledges the relationship between increased criteria pollutant emissions and detrimental health impacts in a discussion specifically relating to the use of alternative jet fuel but does not engage with the health effects from significant air quality impacts from increasingly localized biofuels production. CARB identifies that biofuel emissions are a cause for concern, and acknowledges that these harms will be localized, but the DEIA does nothing to analyze the health effects of air quality impacts from biomass, biofuel, and biomethane production and processes.

As previously highlighted in CBE’s comment on the 15-Day Changes, refinery communities have been living with the racist impacts of fossil fuel pollution for over a century and are deeply and personally aware of the need to phase out polluting refineries, including polluting biofuels refineries. In particular, refinery communities such as those near the Phillips 66 refinery in

Rodeo and the Marathon refinery in Martinez experience heightened pollution burdens and asthma rates above over 80% of the rest of the state.<sup>12</sup> Both the Rodeo and Martinez refinery communities are designated as “disadvantaged communities” by the California Environmental Protection Agency under SB 535 based on geographic, socioeconomic, public health, and environmental hazard criteria.<sup>13</sup> Environmental justice communities already face air pollution levels far beyond what is considered safe for human health, and CARB acknowledges that there will be an increase in local emissions near refineries. Despite this, CARB does not analyze the adverse health effects of the significant air quality impacts from the Proposed Changes.”

**Response:** Please refer to Master Responses 4 and 5 for a discussion regarding concerns related to health risk.

With regards to the comment related to environmental justice, this is not an issue required to be analyzed in the EIA under CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R17-5:** The commenter states, “*B. CARB’s Air Quality analysis does not sufficiently analyze the range of emissions potential from specified impacts and adopts a faulty baseline for analysis.*”

Under CEQA, CARB must provide meaningful context to conclusions concerning significant air quality impacts and human health consequences.<sup>14</sup> The Proposed Changes affect discrete fuels subject to the LCFS regulation, yet the DEIA’s impact analyses for both air quality and greenhouse gas emissions do not address the potential impacts as they relate to the Proposed Changes.

Despite CARB’s conclusion that there will be significant air quality impacts from the proposed changes, CARB provides only minimal data on the pollutant potential of the proposed changes. In fact, CARB only includes data on fine particulate matter (PM<sub>2.5</sub>) and nitrogen oxides (NO<sub>x</sub>) for air quality analysis, and provides a limited, sweeping programmatic analysis of greenhouse gas emissions. Whereas biofuels production is known to create an array of emissions, including volatile organic compounds, and has been linked to more intensive flaring than fossil fuels.<sup>15</sup> Further, hydrogen production of all kinds is known to produce indirect greenhouse gas impacts as hydrogen inevitably leaks.<sup>16</sup> The specific air quality and greenhouse gas emissions impacts of biofuels refining and hydrogen production are particularly concerning for the refinery communities who live, work, play, and pray in the air around these producers with potential health impacts from pollutants. By failing to account for them in the recirculated DEIA, CARB has not satisfied CEQA.

CARB’s analysis of both particulate matter and greenhouse gas emissions also centers overall emissions reductions when contextualizing localized emissions. This model of impact analysis fails to provide an adequate basis for understanding alternatives and mitigation options because it conflates the general benefits of the program with the acute impacts of fuel pathways.

The Altair Biofuels facility in Paramount, California is a decisive example of misleading, generalizing baselines with real life community health impacts. The Altair Paramount refinery went offline in 2011 but came back online and began taking small steps towards creating biofuels in 2013.<sup>17</sup> By 2018, the environmental justice community of Paramount went from facing no production pollution to 25,000 barrels per day of polluting biofuels production.<sup>18</sup> The Environmental Impact Report for the expansion project to create biofuels estimated that the expanded refinery would release 1,743 pounds of VOCs and 2,133 pounds of NOx emissions per day, and it would require 50 rail car unloads per day and 540 diesel truck trips.<sup>19</sup> Biofuels production has the potential to produce significant localized emissions. A comparative analysis that includes emissions reductions from the entire program obfuscates the emissions and impacts of increased biofuels refining amidst the overall benefits of the program. The Altair Paramount scenario highlights that CARB is using the incorrect baseline for analysis of emissions for refineries and refinery communities. The baseline should be as if there were no refinery, since without the biofuels conversion project, there would be no refinery, and this would more accurately show the impacts to the environment. A baseline for future pollution that upholds the legacy of pollution in these communities cements the environmental injustice these communities have historically faced into the future and an unjust transition into a lower carbon future where they are still disproportionately harmed.

Failing to adequately analyze air quality impacts, and greenhouse gas emissions prevents these communities from understanding the risks they face. It also prevents a fruitful discussion of program alternatives and mitigations that could better address these discrete unanalyzed harms.”

**Response:** Please refer to Master Response 4 and 5. In addition, CARB assessed the net changes in criteria emissions in tandem with the aggregate changes in fuel volumes expected under the proposed amendments and display these changes in terms of the likely air basin in which they could occur. As provided on page 52 to 54 of the Recirculated EIA, the Proposed Amendments would result in shifting fuel production activities and the establishment of new fuel production, pollutant and other emissions. These potential local increases in emissions would be largely dependent on the extent and location of increased biofuel production. See Appendix C-1 of the ISOR for more information on individual fuel production, transport, and use emission factors. While CARB anticipates some potential increases in local emissions associated with increased biofuel production and transport and biomethane production, on an air basin level, CARB does not believe significant localized increases are likely since these increases would likely be equivalent to or less than emission reductions associated with biodiesel, renewable diesel, and alternative jet fuel use. In addition, the Recirculated Draft EIA provides on page 53, in response to the LCFS amendments, small emissions increases may occur near feedstock and finished fuel transportation routes and near production facilities. Emissions from these stationary sources would be monitored and controlled by local air districts to minimize the negative impacts from the increased production. These potential local increases in emissions would be largely dependent on the extent and location of increased biofuel production. Because the LCFS does not specify the specific sites at which alternative fuels are produced, both the extent of increased biofuel production and the location of potential new biofuel facilities cannot be known at this time and would be too speculative to quantify.

This is consistent with the 2023 baseline CARB used for its CEQA analysis (see page 37 of the EIA).

The degree of specificity in CARB's analysis was appropriate. CARB prepared this Draft EIA to assess the potential for significant adverse and beneficial environmental impacts associated with the Proposed Amendments, as required by CARB's certified regulatory program (Title 17 CCR § 60005[b]). The resource areas from the CEQA Guidelines Environmental Checklist were used as a framework for assessing the potential for significant impacts (Title 17 CCR § 60005[b]). "The degree of specificity required in an [EIA] will correspond to the degree of specificity involved in the underlying activity that is described in the [EIA]." (CEQA Guidelines, § 15146.) How, when, and where an entity determines to produce a biofuel in a specific facility in response to the Proposed Amendments is a business-driven decision that is speculative at this stage. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. The analysis CARB performed is appropriate given the programmatic nature of a broad regulatory program such as the Proposed Amendments.

**R17-6:** The commenter states, "C. The impacts analysis fails to address cumulative impacts."

The DEIA must include a discussion of the cumulative and growth-inducing impacts of the proposed rule changes.<sup>20</sup> Cumulative impacts include the effects of past, present, and future actions. The cumulative impact from several projects is the change in the environment which results from incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects.<sup>21</sup> CARB does not perform any cumulative analysis at all, in fact the word "cumulative" does not appear in the Recirculated DEIA. Discussion and analysis of cumulative and growth-inducing impacts is essential when considering the array of impacts identified from the proposed changes. Further, cumulative impacts analysis is important to understanding the historical burden and legacy of pollution for refinery communities."

**Response:** The Draft EIA analyzes the Proposed Amendments cumulative and growth-inducing impacts on pages 141 to 168. As provided in Chapter 1.0 of the Recirculated EIA, in accordance with Public Resources Code (PRC) Section 21092.1 and Title 14 California Code of Regulations (CCR) Section 15088.5, the scope of the Recirculated EIA was limited and did not recirculate the cumulative impacts:

"the revisions to the project description are based on additional changes to the Proposed Amendments as well as the inclusion of additional information provided in the air quality and GHG evaluations. These revisions and additional information have not shown any new, substantial environmental impacts, any substantial increases in the severity of an environmental impact, or any alternative or mitigation measure considerably different from those considered in the Draft EIA. Rather, the revisions and additional information have resulted in the addition of substantial new information compared to what was presented in the Draft EIA. Therefore, CARB has determined



that recirculation of the project description and the air quality and GHG evaluations is warranted.”

The project description, air analysis, and GHG analysis were the only three areas of the Draft EIA determined to need the addition of new information and therefore recirculation. The compliance responses and significance findings remained consistent with the Recirculated EIA, so recirculation of the cumulative and growth-inducing impacts was not required. All other portions of the Draft EIA are still valid as originally disclosed. Based on this determination there was no evidence warranting the recirculation of new cumulative and growth inducing impacts analysis as none of the significance conclusion in the Draft EIA were altered by the Recirculated EIA.

**R17-7:** The commenter states, “D. CARB improperly concludes that the proposed changes will have no significant impact on odors, despite evidence otherwise.

The Recirculated DEIA’s finding that long-term operational impacts from odors are less than significant is likely incorrect because it overlooks odor impacts at biofuel refineries. In both the Phillips 66 Rodeo and Marathon Martinez refinery conversions, the Environmental Impact Reports for both conversion projects found that odor impacts could be significant without mitigation measures.<sup>22</sup> Although the elimination of petroleum refining has beneficial impacts on refinery odors, the use of animal-based feedstocks can create odors similar to those from animal and food processing facilities.<sup>23</sup> The risks of these odor impacts led Contra Costa County to require odor mitigation measures at both biofuel refineries. Given these findings of significant odor impacts from specific biofuel refinery facilities, CARB should reconsider its finding of less-than-significant odor impacts.”

**Response:** Feedstocks for biofuels include byproducts of existing operations (e.g., animal fat, used cooking oil) and crops grown for biofuel or other commodity uses (e.g., corn, soy, and sugarcane). As stated in the EIA, biofuels rely on feedstock production and are driven by economic demand and supply factors associated with the market for these feedstock products, such as cost and availability, regulatory requirements, compatibility, physical and transportation routes, available infrastructure, and economic feasibility. Further, the proposed LCFS Amendments do not mandate the feedstocks for refineries to use for compliance, and given the uncertainty of market forces, economic demand, and supply, it would be speculative to conclude a certain feedstock would be used at a biofuel facility and, thus, speculative about the subsequent impacts.

To the extent the commenter is referring to existing facilities, the existing LCFS program already incorporates the use of animal-based feedstocks to produce biofuel at refineries, so odor impacts would be considered part of the baseline existing conditions and not a compliance response to the proposed LCFS Amendments.

**R17-8: The commenter states, “III. CARB has feasible options, within its authority, to mitigate significant air quality impacts.”**

CEQA requires CARB to identify feasible mitigation measures that would “substantially lessen the significant environmental effects” of the proposal.<sup>24</sup> “Feasible” mitigation means measures “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.”<sup>25</sup> Contrary to what the Recirculated DEIA concludes, CARB has feasible options to mitigate the air quality impacts of the proposal.

The Recirculated DEIA correctly concludes that Short-Term Construction-Related and Long-Term Operational-Related Impacts on Air Quality are significant, although as outlined above it does not thoroughly or adequately discuss the causes of local emissions increases.

CARB estimates that “localized increases in emissions” could occur near biofuel production facilities, routes for biofuel feedstock, and routes for finished fuel transportation.<sup>26</sup> The proposed changes to hydrogen also underscore that CARB should also consider potential local increases in emissions around facilities that produce fossil-based hydrogen matched with biomethane credits (for example, at the Shell Energy natural gas-based hydrogen facilities in Carson and Wilmington).<sup>27</sup>

The Draft EIA’s conclusion that air quality impacts are unavoidable is not correct. CARB continues to argue that there are no feasible mitigation options because CARB does not have authority to require implementation of mitigation for projects that are under control of local and state land use and permitting authorities. However, as previously raised in CBE’s prior comments, there are many feasible mitigation options that are squarely within CARB’s authority.

First, CARB can require, as a condition for earning LCFS credits, that trucks carrying feedstocks and finished fuels to and from biofuel, hydrogen, and biomethane facilities are zero-emissions vehicles. CARB has authority to place conditions on pathway holders (for example, the proposal would impose sustainability certification conditions on pathway holders for crop-based biofuels). CARB also has authority, which it deploys in the Advanced Clean Fleets Rule, to require fleets to phase in zero-emission vehicles. And thanks in part to CARB’s groundbreaking vehicle emissions regulations, the use of zero-emission trucks is a feasible technology option to use for mitigation.

Second, CARB can prohibit or invalidate approval of pathways at facilities that are out of compliance with state and federal air quality regulations. This is a common-sense, necessary measure to ensure that the LCFS does not continue incentivizing unlawful releases of air pollution. For example, in 2021 CARB approved three pathways for Phillips 66 Rodeo to produce renewable diesel, despite receiving notice via the pathway application comments that the facility was under investigation by the Bay Area Air Quality Management District for operating an unpermitted renewable diesel hydroprocessing unit.<sup>28</sup> CARB has clear authority to prevent these situations, as CARB’s Executive Officer can “restrict, suspend, or invalidate

credits” that are “generated... in violation of other laws, statutes, or regulations.”<sup>29</sup> This option is also plainly feasible, because it merely requires compliance with existing air quality regulations.

Third, CARB can prohibit approval of pathways that produce significant air pollution in areas out of attainment with air quality standards, and/or in environmental justice communities. This would be highly effective in mitigating localized air pollution impacts, and it fits squarely within CARB’s authority to decide which fuel pathways are eligible to receive credits under the program.

These are just three examples of feasible mitigation options that CARB should consider before concluding that air quality impacts are unavoidable.”

**Response:** Please refer to response to comment 313-3.4. The LCFS regulation provides market signals that support the production and consumption of alternative low-carbon fuels that displace gasoline, diesel and fossil jet fuel. As part of each rulemaking effort to amend the LCFS program, staff assess the aggregate air quality impacts of the proposed amendments, which are tied to potential future changes in fuel production and consumption in response to the proposed amendments. There is no realistic compliance path that does not result in potential air quality impacts associated with scaling up alternative fuels, including fuels for zero emission vehicles such as electricity and hydrogen. The EIA finds that the Proposed Amendments to the LCFS Regulation would result in net air quality benefits, and takes a conservative approach with regard to disclosure of potential increases in fuel production and transport emissions (although these are exceeded by benefits from the proposed amendments in aggregate).

**R17-9:** The commenter states, “**IV. The DEIA should include alternative scenarios that include a cap on credits for biofuels.**”

CARB’s certified regulatory program requires CARB to produce Environmental Impact Analyses analyzing whether any feasible alternatives are available that would substantially lessen any significant environmental impacts.<sup>30</sup> The alternatives should “consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation.”<sup>31</sup> A recirculated analysis is required when significant new information is available regarding substantial adverse environmental effects, or feasible ways to mitigate and project alternatives.<sup>32</sup>

The Recirculated DEIA does not contain or address an alternative that caps credits for biofuels. The cap alternative was not included in the initial DEIA either, despite being a feasible project alternative that would mitigate adverse environmental impacts of the program. The twenty percent companywide limit proposed in the 15-day changes acknowledges the significant environmental impacts that stem from the high supply of credits for biofuels. The initial DEIA depended primarily on the stringency of carbon intensity targets, providing only minor variants in the supply of different types of credits. In comments on the initial DEIA, CBE flagged that these alternatives failed to significantly change the environmental impacts of the

proposal as they relate to biofuels.<sup>33</sup> A market-wide volumetric cap on lipid-based biofuels credits is an essential alternative that must be analyzed in order for CARB and the public fully evaluate the range of regulatory options and their environmental impacts.

This failure is particularly troubling because CARB is, in fact, considering a regulatory option that includes limiting biofuels. “Alternative 1” in the ISOR’s “Evaluation of Regulatory Alternatives” is a scenario with lower carbon intensity stringency and a limit on virgin crop-based biofuels, which is similar to the proposed rule offered in the August 2024 15-Day Changes. The Recirculated DEIA is a second opportunity to include a volumetric cap on biofuels alternative in the DEIA, after it was called for in the Comprehensive EJ Scenario requested by EJAC and repeatedly requested in feedback from stakeholders. Yet CARB has again failed to include a biofuels cap or any new alternatives analysis in the Recirculated DEIA. Including a biofuels cap scenario in the EIA would enable consideration of a variety of environmental resource impacts that are not studied in the ISOR. By excluding a biofuels cap scenario from its CEQA analysis, CARB fails to evaluate an alternative that could effectively mitigate the overburdened market for biofuels credits, as well as limit the incentives and therefore impacts of biofuels refining. The proposed company-wide limit change acknowledges that limiting biofuels is necessary, CARB’s CEQA analysis should consider the dutifully raised alternative of a volumetric, market-wide biofuels credit cap alternative.

In the Recirculated DEIA “CARB concludes that long-term local air quality impacts associated with the Proposed Amendments could be potentially significant and unavoidable.”<sup>34</sup> Analyzing a biofuel cap alternative in the EIA would enable CARB to evaluate whether a reduced supply of biofuel credits could reduce the significant impacts identified in the initial DEIA and again underscored in the Recirculated DEIA. In order to comply with requirements under CEQA to analyze alternatives, CARB must incorporate a cap on biofuels in another recirculated DEIA.”

**Response:** Please refer to Responses to R16-8, R17-6, and Master Response 2.

**R17-10:** The commenter states, “**V. Conclusion**

In sum, the proposed changes pose unknown substantial and unacceptable risks to California residents, and in particular will increase the pollution burden felt by communities nearby refineries. The details of the proposed changes significant environmental and public health impacts are impossible to determine from the recirculated draft EIA, which omits key analyses, details, and supporting documents. For all these reasons, CARB must undertake a broad revision of the recirculated EIA that fully assesses and mitigates the proposed changes environmental and public health harms, including those identified above, and provides all supporting information documents, and data. In light of the recirculated draft EIAs present inadequacy as an informational document which deprives the public of a meaningful opportunity to review and comment, CBE respectfully requests the Recirculated DEIA be revised and recirculated with the necessary information.”

**Response:** The Comment provides a summary of comments provided above. Please refer to Responses to R17-2 through R17-9.



**Comment Letter R18**

2024/09/30

Center for Biological Diversity

Shaye Wolf, PhD, Climate Science Director

**R18-1:** The commenter states, “The Center for Biological Diversity submits the following comments on the California Air Resources Board’s (CARB) recirculated Draft Environmental Impact Analysis (EIA) for the proposed Low Carbon Fuel Standard (LCFS) amendments. We are commenting on the revised Proposed Amendments, specifically the revised project description and associated air quality and greenhouse gas (GHG) assessments which were updated through 15-day changes released on August 12, 2024.

Please note that we are submitting the references cited herein for CARB’s convenience. Those references are available here: <https://diversity.box.com/s/8jcli9f2vwyof9cbq1qx5sna1m0d0hsb>. We also incorporate our previous comments submitted on the Proposed LCFS Amendments on August 26, 2024 and February 20, 2024.”

**Response:** The comment contains an introductory statement and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA. The comment does not require a written response under CARB’s certified regulatory program implementing CEQA.

**R18-2:** The commenter states, “The EIA has several significant flaws with respect to the revised impacts analyses and mitigation measures, which result in under-estimates of the air quality and GHG harms that will be caused by implementation of the Proposed Amendments.

The EIA states that the revised Proposed Amendments will allow hydrogen production from woody biomass feedstocks including forest and agricultural residues;<sup>1</sup> allow electricity production from forest and agricultural residues;<sup>2</sup> and allow the development and construction of CCS (carbon capture and storage) projects.<sup>3</sup> The EIA further states that foreseeable compliance with the Proposed Amendments will result in: (1) an increase in the construction and operation of biomass gasification and pyrolysis facilities to produce hydrogen and renewable natural gas (methane), the associated “increase in removal of forest litter and agricultural residues,”<sup>4</sup> and the construction and operation of new infrastructure such as new hydrogen pipelines or truck transport;<sup>5</sup> and (2) “modification to existing or new industrial facilities to capture CO<sub>2</sub> emissions” and associated “construction of new infrastructure such as pipelines, wells and other surface facilities.”<sup>6</sup> The EIA concludes that these presumed “low-CI” hydrogen, electricity, and fuels produced using CCS “may result in reductions in criteria pollutants and air toxics”<sup>7</sup> and will result in lower GHGs, compared with fossil fuels.<sup>8</sup>

Critically, however, the EIA fails to adequately assess the air pollution and GHG impacts that will result from hydrogen and electricity production using woody biomass feedstocks and from fuels produced using CCS, under the revised amendments. The EIA’s impacts assessment likely significantly under-estimates the GHGs and air pollution that will result from incentivizing these “fuels” under the LCFS program and fails to provide mitigation measures to address these foreseeable impacts. The EIA cannot reliably conclude that the Proposed Amendments

will lower GHG emissions and potentially lower air pollutant emissions without conducting the required science-based assessments of the GHG and air pollution impacts from the production of hydrogen and electricity from woody biomass feedstocks, and fuels produced using CCS.

For these reasons, CARB should prepare and circulate a revised analysis that complies with the information and mitigation requirements CEQA.”

**Response:** The technologies and fuel pathways identified by the commenter were included as possible future compliance responses for the purposes of disclosure under CEQA. However, modeling of future compliance scenarios conducted for the Proposed Amendments did not predict any uptake in hydrogen and electricity production using woody biomass feedstocks and from fuels produced using CCS, as demonstrated in the modeling outputs posted on the LCFS Supplemental Modeling webpage. As a result, the air quality analysis, which is based upon the actual changes in fuel volumes that are likely to result from the Proposed Amendments, did not quantify the air quality impacts of these fuels. For the same reason, no greenhouse gas emissions benefits are attributed to these technologies as part of the Proposed Amendments. Staff finds no issues with the conclusions of the EIA.

**R18-3:** The commenter states, “**(1) The EIA fails to adequately assess the GHG and air pollution impacts that will result from the construction and operation of gasification/pyrolysis facilities to produce hydrogen from woody biomass feedstocks, and fails to mitigate these impacts.**”

CARB’s LCFS program does not have a carbon intensity (CI) calculator for hydrogen produced using forest or agricultural feedstocks. CARB’s proposed hydrogen CI calculator only covers hydrogen produced via steam methane reformation and electrolysis. Therefore, the EIA cannot and has not adequately assessed the GHG and air pollution impacts of producing hydrogen from the gasification or pyrolysis of forest and agricultural feedstocks.

As we detailed in our February 20, 2024 comments on the LCFS amendments, the best-available science demonstrates that producing hydrogen from the gasification and pyrolysis of forest and agricultural biomass feedstocks releases large amounts of planet-heating CO<sub>2</sub> and toxic air pollutants, as summarized below.”

**Response:** Please refer to response to comment R18-2.

**R18-4:** The commenter states, “**(a) Gasification and pyrolysis of woody feedstocks to make hydrogen produce large amounts of CO<sub>2</sub>.**”

The gasification of biomass at high temperatures (800-1200°C) produces a “syngas” containing large amounts of CO<sub>2</sub>, as well as methane (CH<sub>4</sub>), carbon monoxide (CO), and hydrogen (H<sub>2</sub>), in addition to liquid hydrocarbons and tar, solid char and ash residues, and a wide array of air pollutants.<sup>9</sup> The pyrolysis of biomass additionally produces pyrolytic oil and larger quantities of char. Therefore, similar to biomass combustion, gasification and pyrolysis of biomass produce large quantities of CO<sub>2</sub> as well as methane emissions.”

**Response:** The comment provides an opinion on the carbon dioxide generation potential from biomass and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA. The comment does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R18-5:** The commenter states, “**(b) Woody biomass is not a carbon neutral feedstock: the combustion, gasification and pyrolysis of trees and other forest material—including residues considered to be “waste”— leads to a net increase of carbon emissions in the atmosphere for decades to centuries.**”

Biomass-derived hydrogen is often falsely promoted as being carbon neutral based on the inaccurate claim that woody biomass is a carbon neutral feedstock. This claim has been thoroughly discredited. Cutting trees ends their carbon storage and sequestration; significant upstream emissions are emitted during cutting, extracting, trucking, and processing woody biomass;<sup>10</sup> and significant downstream CO<sub>2</sub> emissions are produced from gasification, pyrolysis, or combustion.<sup>11</sup>

To claim biomass energy is carbon neutral, proponents try to discount the CO<sub>2</sub> that is released by taking credit for the carbon that will be absorbed by future tree growth. This is misleading because forest regrowth takes time and is highly uncertain—there is no guarantee that cut forests will be allowed to grow back or that forests won't be converted to other land uses. Instead, research has concluded that the combustion, gasification, and pyrolysis of trees and other forest material—including residues considered to be “waste”— leads to a net increase of carbon emissions in the atmosphere for decades to centuries.<sup>12</sup>

Numerous scientific bodies have established that woody biomass energy should not be assumed to be carbon neutral. The EPA's Scientific Advisory Board advised the agency that no type of biomass should be considered automatically carbon neutral.<sup>13</sup> That Board's opinion comports with Intergovernmental Panel on Climate Change assessments (IPCC) which states that “IPCC Guidelines do not automatically consider or assume biomass used for energy as ‘carbon neutral,’ even in cases where the biomass is thought to be produced sustainably.”<sup>14</sup>

Research also indicates that methane emissions from wood chip piles at biomass facilities can be large enough to significantly add to the overall GHG impact of bioenergy production. One study concluded that wood chip piles can cause “remarkable” methane emissions as well as nitrous oxide (N<sub>2</sub>O) emissions, “greenhouse gas emissions from storage [in wood chip piles] can, in some cases, be much greater than emissions from the rest of the biofuel production and transportation chain.”<sup>15</sup>

**Response:** Please refer to Master Response 5. The comment provides an opinion on the carbon dioxide generation potential from biomass and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA. The comment does not require a written response under CARB's certified regulatory program implementing CEQA. However,



this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R18-6: The commenter states, “(c) Biomass gasification and pyrolysis to make hydrogen produce a wide range of health-harming pollutants.”**

The EIA fails to assess the impacts of the wide range of health-harming pollutants produced by biomass gasification and pyrolysis. These pollutants include fine particulate matter, NO<sub>x</sub>, SO<sub>x</sub>, benzene, toluene and xylenes (BTEX), tars and soot, and persistent organic pollutants such as polycyclic aromatic hydrocarbons (PAHs) (e.g., naphthalene), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs).<sup>16</sup> Importantly, gasification and pyrolysis of biomass are significant sources of fine particulate matter (PM 2.5) that can penetrate deeply into the lungs, even enter the bloodstream, and cause serious health problems.<sup>17</sup> Fine particulate matter pollution is linked to a higher risk of premature death, heart disease, stroke, and aggravated asthma.<sup>18</sup>

The formation of NO<sub>x</sub> precursors, including NH<sub>3</sub>, HCN and HNCO, during biomass pyrolysis has been widely reported, where NO<sub>x</sub> damages the respiratory system and contributes to acid rain, harming ecosystems.<sup>19</sup> Of the BTEX compounds produced during gasification and pyrolysis, benzene is a well-known human carcinogen, and toluene and xylenes damage the brain and nervous system, respiratory system, kidneys, and liver.

The formation of liquid tar is an inherent problem in biomass gasification. Tar contains toxic substances such as benzene, toluene, and naphthalene, while tar build-up also lowers energy efficiency, interrupts continuous operation, and increases maintenance costs of gasification processes.<sup>20</sup> Methods to clean tar from equipment would create large amounts of toxic wastewater, with resulting environmental and community harms.<sup>21</sup>

**Response:** Please refer to Master Response 4 for a discussion related to health risk impacts; please also refer to response to comment R18-2.

**R18-7: The commenter states, “(d) The EIA fails to address the GHG impacts of using forest residues for fuels production.”**

The Proposed Amendments’ specifications for forest residues are that they are “[s]mall-diameter, non-merchantable forestry residues removed for the purpose of forest fire fuel reduction or forest stand improvement and from a treatment where no-clear cutting occurred.”<sup>22</sup> These specifications are too vague to limit forest degradation nor will they meaningfully reduce the foreseeable harms to the climate.

Almost all forest logging and thinning projects are done under the justification that they will “promote forest health and resilience and/or are needed for fuels reduction.” Trees and other forest vegetation of any size can be lopped and masticated into “small-diameter” residues and called “non-merchantable.” Incentivizing the commodification of forest materials under the LCFS will lead to the removal of more trees and other habitat from the forest than would

happen if these materials were not commodified, threatening forest ecosystems and forest carbon storage and sequestration. In terms of climate impacts, research shows that broad-scale thinning for wildfire management leads to more carbon emissions than it prevents from being released in a wildfire, and results in a net increase of carbon emissions to the atmosphere and net decrease in forest carbon storage.<sup>23</sup> The EIA fails to account for the significant GHG impacts that would result from incentivizing forest residues to be used for fuels production under the LCFS program.”

**Response:** Please refer to response to comment R18-2.

**R18-8:** The commenter states, “**(2) The EIA fails to adequately assess the GHG and air pollution impacts that will result from the production of electricity from woody biomass feedstocks, and fails to mitigate these impacts.**”

CARB’s LCFS program does not have a carbon intensity calculator for electricity produced using forest feedstocks. Therefore, the EIA cannot and has not adequately assessed the GHG and air pollution impacts of producing electricity from these feedstocks. The best-available science shows that woody biomass energy is highly polluting for the climate and communities. Burning trees and other woody materials for electricity releases more CO<sub>2</sub> at the smokestack than coal per unit of energy produced.<sup>24</sup> As a result, biomass power plants are much more climate polluting than other electricity sources in California. Biomass power plants are also among the largest emitters of particulate matter (PM) and nitrogen oxide (NO<sub>x</sub>) in the state, imperiling neighboring communities, in addition to emitting large amounts of hazardous air pollutants, such as dioxins, benzene, formaldehyde, arsenic, lead, and mercury.<sup>25</sup> Biomass power plants are often concentrated in communities of color and low-wealth communities in the Central Valley already suffering from high pollution burdens, worsening environmental injustice.”

**Response:** Please refer to response to comment R18-2.

**R18-9:** The commenter states, “**(3) The EIA fails to adequately assess the GHG and air pollution impacts that will result from the construction and operation of CCS projects, CO<sub>2</sub> pipelines, and associated infrastructure, and fails to mitigate these impacts.**”

The EIA fails to base its assessment of the GHG and air pollution impacts of CCS projects on the real-world performance of these projects. Instead, the EIA appears to make unrealistic assumptions about the carbon capture efficiency and energy penalty of CCS projects that lead to an underestimate of the GHG and air pollution harms of these projects.

CARB assumes that CCS projects meet a 90% carbon capture rate, but this is far from what is achieved in reality. CCS projects around the world have failed drastically—and repeatedly—to meet their promised carbon capture rates, often by large margins.<sup>26</sup> For example, the Petra Nova<sup>27</sup> CCS facility in Texas which was promised to capture 90 percent of the power plant’s total CO<sub>2</sub> emissions only captured 7 percent.<sup>28</sup> One recent real-world California example is the Aera CarbonFrontier project proposed in Kern County. That Project’s CEQA review shows that

for at least the first seven years, the project will be net positive in GHG emissions, even while running CCS on its natural gas-fired power plants.<sup>29</sup>

CCS operations are also very energy-intensive given the high energy requirements needed to separate, compress, transport, and inject CO<sub>2</sub>, typically requiring at least 15-40% more energy, which results in increased greenhouse gas and air pollution emissions.<sup>30</sup> Thus, the installation of CCS and its concomitant energy penalty drives even more air pollution at the facility and upstream, which appears to be unaccounted for in CARB's air quality modeling. Furthermore, the EIA does not appear to account for the impacts of inevitable ruptures of CO<sub>2</sub> pipelines and leaks from underground CO<sub>2</sub> storage that not only harm the climate but can sicken and even kill people.<sup>31</sup>

**Response:** Please refer to Master Responses 4 and 5 regarding CARB's air impact analysis and lifecycle analysis. Please refer to response to Comment 18-2 regarding the consideration of CCS in the air emissions analysis.

Chapter 2.0 of the EIA disclosed reasonably foreseeable compliance response to the Proposed Amendments included the construction and operation of new facilities to capture ambient CO<sub>2</sub> emissions (CCS), modification of existing or construction of new industrial facilities to capture CO<sub>2</sub> emissions (CCS), and construction of new infrastructure, such as pipelines, wells, and other surface facilities to enable the transport and injection of CO<sub>2</sub> into a geologic formation for sequestration. It also disclosed increased transportation and increased electricity demand may be anticipated. The impacts of the Proposed Amendments, including were analyzed in accordance with the topics presented in the Environmental Checklist in Appendix G to the CEQA Guidelines. (tit. 14, Cal Code Regs., sec. 15000 *et seq.*) At this time, the specific location, type, and number of CCS facilities to be constructed are not known and would be dependent upon a variety of factors that are not within the control or authority of CARB and not within its purview. While it would be too speculative to quantify the construction and operation impacts to provide a meaningful evaluation of individual facilities, the analysis presented herein provides a good-faith disclosure of the general types of emission impacts that could occur with implementation of these reasonably foreseeable compliance responses. In addition, the CCS Protocol, which includes a quantification methodology that accounts for all emitted and sequestered CO<sub>2</sub>, ensures that there is a net GHG emissions decrease (i.e., a GHG emissions benefit) for all CCS projects, including CCS projects associated with production of conventional fuels. Anticipating potential ruptures or leaks in future CCS pipelines for facilities that have not yet been proposed is speculative and therefore not required for review under CEQA.

**R18-10:** The commenter states, "**Conclusion**

Because the EIA fails to adequately assess and mitigate the increased air and climate impacts from its Amendments, the EIA is defective as an informational document and should be redone in line with best available science. Ultimately, however, as detailed in our prior comments, we urge CARB to remove the production of fuels, hydrogen, and electricity from woody biomass feedstocks and dairy biogas from the LCFS program due to their significant harms to the

climate, communities, and ecosystems. We urge CARB to remove CCS projects from the LCFS program, including credits to projects outside of California that produce oil using captured carbon dioxide.

Thank you for consideration of these comments.”

**Response:** The comment provides a summary of comments provided above. Please refer to Responses to R18-2 through R18-9.

**Comment Letter R19**

2024/09/30

Western Independent Refiners Association

Craig A. Moyer, Executive Director and General Counsel

**R19-1:** The commenter states, “The Western Independent Refiners Association (“WIRA”) appreciates the opportunity to comment on the California Air Resources Board’s (“Board”) Recirculated Draft Environmental Impact Analysis for the Proposed Low Carbon Fuel Standard Regulation (“Recirculated Draft EIA”) released August 16, 2024.

WIRA previously provided the Board its comments on the Proposed 15-Day Changes to the Proposed Amendments to the Low Carbon Fuel Standard (“LCFS”) Regulations (the “Proposed Amendments”). WIRA’s August 27, 2024, comment letter, attached hereto and incorporated herein, outlined our concerns with the operational and economic impacts the Proposed Amendments will have on regulated entities, including, specifically, the proposal to limit LCFS credits for biofuels generated from soybean oil and canola oil. WIRA now takes the opportunity to respectfully provide its feedback concerning the accuracy and completeness of the environmental review.”

**Response:** The comment provides background information about the commenter and contains an introductory statement. The comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R19-2:** The commenter states, “Our concerns with the Recirculated Draft EIA’s adequacy under the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) (“CEQA”) can be summarized as follows. First, the revised emissions analysis and modeling presented in the Recirculated Draft EIA significantly overestimate the greenhouse gas emissions reductions that will take place if the proposed soybean and canola oil cap is implemented. Second, we do not believe that the very limited scope of the Recirculated Draft EIA is appropriate, given the very significant modifications to the LCFS proposed after the original release of the Draft EIA. The post-circulation changes require that CARB revise and recirculate several portions of the EIA—not just its emissions modeling. Third, the Recirculated Draft EIA does not present the meaningful alternatives analysis that is required for consideration of potential impacts from the soybean and canola oil cap and other Proposed Amendments.”

**Response:** The comment provides a summary of comments provided below. Please refer to Responses to R19-3 through R19-5.

**R19-3:** The commenter states, “**1. The Recirculated Draft EIA overestimates emissions reductions and does not support its conclusions with substantial evidence.**

The Proposed Amendments would immediately cap the generation of LCFS credits from soybean and canola oil feedstock. As detailed in numerous comment letters previously submitted to CARB, clean fuels derived from these feedstocks have made, and continue to make, positive contributions to California's greenhouse gas emission reduction goals, and are primed to continue to support cost effective emissions reductions in the future. Stifling these feedstocks through imposition of a cap will stifle clean fuel investments, increase reliance on diesel fossil fuels, and not only slow reductions in criteria air pollutants and greenhouse gas emissions, but potentially increase these emissions. The Recirculated Draft EIA does not adequately reflect these reasonably foreseeable effects.

The Recirculated Draft EIA purports to have "reassessed and expanded" the EIA's air quality and greenhouse gas evaluations "with modeling outputs that reflected the Proposed Scenario in the 15-day Notice package." However, in the list of "reasonably foreseeable compliance responses" the Recirculated Draft EIA does not in any way acknowledge that placing a cap on LCFS credit generation from soybean and canola feedstocks will reasonably lead to actions that increase criteria pollutant and greenhouse gas emissions. If soybean and canola feedstocks are capped, this slice of the feedstock pie necessarily must be replaced, potentially with increased foreign import of waste feedstocks. The transport of feedstocks from across the globe generates significant emissions, none of which are captured in the Recirculated Draft EIA.

Similarly, it is a reasonably foreseeable consequence that the cap will force many biodiesel processors out of business, and as a result, the biofuel market will shrink. Again, the market will be forced to replace this fuel with something else, and it is reasonably foreseeable that petroleum diesel utilization will necessarily increase. There is no accounting for increased emissions from increased reliance on petroleum diesel in the Recirculated Draft EIA. Instead, the EIA acknowledges the cap, but then goes on to conclude that "[b]iomass-based diesel fuel attributed to the LCFS as part of the Proposed Amendments could result in an overall potential decrease in long-term operational NOx and PM emissions relative to use of conventional diesel." But, there is no explanation of how capping biomass-based fuel supports this conclusion.

The Recirculated Draft EIA ultimately determines that the Proposed Amendments will achieve reductions of approximately 30 MMT CO<sub>2</sub>e of greenhouse gas emissions (p. 60), 9,232 tons of PM<sub>2.5</sub>, and 35,161 tons of NO<sub>x</sub> in aggregate through 2046 (p. 46). But, for all the reasons outlined above, these estimates are unsupported by substantial evidence. In fact, the substantial evidence in the record, including, specifically, CARB's own staff analysis as presented at the April 10, 2024, public workshop, shows that a cap on soybean and canola oil feedstocks will increase dependence on dirtier fuels, will increase greenhouse gas and criteria pollutant emissions, and will result in related health impacts. The Recirculated Draft EIA's emissions impact analysis is therefore inadequate. (See *Laurel Heights Improvement Association v. Regents of University of Cal.* (1988) 47 Cal.3d 376, 404 [a bare conclusion without explanation of its factual and analytical basis is not a sufficient analysis].)"

**Response:** Please refer to Response to Comment R17-5 and Master Response 2.

**R19-4:** The commenter states, “**2. The limited scope of the Recirculated Draft EIA does not analyze and disclose non-emissions related impacts caused by the Proposed Amendments.**”

The Recirculated Draft EIA revises the Project Description to reflect the Proposed Amendments, but then updates and recirculates only the EIA’s air quality and greenhouse gas emissions analyses. Yet, the Proposed Amendments, and the soybean and canola oil credit cap in particular, will result in impacts beyond air quality and greenhouse gas emissions. These impacts are not analyzed or disclosed in any manner in the Recirculated Draft EIA.<sup>1</sup> Thus, CARB is required to prepare this analysis now, and recirculate a Draft EIA with a more expansive scope for public review and comment. (See *Sierra Watch v. County of Placer* (2021) 69 Cal.App.5th 86, 103.)

As detailed in various comments previously submitted to CARB by stakeholders, the soybean and canola oil cap will put biofuel producers out of business. This is not just a social or economic impact, but one that will result in clearly foreseeable and concrete physical changes to the environment.<sup>2</sup> Any aesthetics, agricultural, soils, or biological impacts analysis completed prior to the Proposed Amendments is not capable of filling this gap, given that previously there was no proposed cap on credit production from soybean and canola feedstocks, and therefore no consideration of the same in the originally circulated Draft EIA.”

**Response:** In accordance with Public Resources Code (PRC) Section 21092.1 and Title 14 California Code of Regulations (CCR) Section 15088.5, when “significant new information is added to an environmental impact report (EIR) after notice has been given pursuant to Section 21092” and the draft EIR has undergone public review, a lead agency must recirculate the environmental document for public review of the new information. For these purposes, “information” can include changes in the project’s environmental setting as well as additional data or other information. Recirculation is not required unless the EIR is changed in a way that would deprive the public of the opportunity to comment on significant new information, including a new significant impact for which no feasible mitigation is available to fully mitigate the impact (thus resulting in a significant and unavoidable impact), a substantial increase in the severity of a disclosed significant environmental impact, development of a new feasible alternative or mitigation measures that would clearly lessen environmental impacts but that the project proponent declines to adopt, or the draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded (Title 14 CCR § 15088.5[a]). Recirculation is not required when the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR (Title 14 CCR § 15088.5[b]).

The revisions to the project description are based on additional changes to the Proposed Amendments as well as the inclusion of additional information provided in the air quality and GHG evaluations. These revisions and additional information have not shown any new, substantial environmental impacts, any substantial increases in the severity of an environmental impact, or any alternative or mitigation measure considerably different from those considered in the Draft EIA. Rather, the revisions and additional information have

resulted in the addition of substantial new information compared to what was presented in the Draft EIA. Therefore, CARB has determined that recirculation of only the project description and the air quality and GHG evaluations is warranted. All other portions of the Draft EIA are still valid as originally disclosed. Based on this determination there was no evidence warranting the recirculation of any of the other resource areas as none of the significance conclusion in the Draft EIA were altered by the Recirculated EIA.

Please also refer to Master Response 2.

**R19-5:** The commenter states, “**3. The Recirculated Draft EIA, together with the Draft EIA, fail to provide CARB with a meaningful alternatives analysis.**”

CARB is required to present the public with a reasonable range of alternatives, and disclose to the public an accurate and complete comparison of the impacts that result from each alternative. (Cal. Code Regs., tit. 14, § 15126.6(a).) Because the Recirculated Draft EIA overestimates air emissions reductions and does not acknowledge myriad non-emissions impacts associated with the Proposed Amendments, any comparison of alternatives would be inherently flawed. There can be no fair comparison of the Proposed Amendments against any iteration of the LCFS without those changes, given that, for the reasons addressed above, the Recirculated Draft EIA presents unsupportable estimates of emissions reductions, and ignores potential non-emissions impacts.”

**Response:** Please refer to Response to Comments R16-8 and R19-4.

**R19-6:** The commenter states, “WIRA continues to respectfully encourage the Board to reconsider the proposed soybean and canola cap. Yet, if CARB moves forward with the cap, CEQA requires that CARB prepare and provide a fair and accurate reporting of the potential impacts resulting from the cap. Only then can CARB’s decisionmakers, and the public, fully understand the impacts of the Proposed Amendments. Thank you for your thoughtful consideration of this letter. If you have any questions, please do not hesitate to contact me at (310) 312-4353 or by email at [cmoyer@manatt.com](mailto:cmoyer@manatt.com).”

**Response:** The comment provides a closing remark and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.



**Comment Letter R20**

2024/09/30

Global Clean Energy Holdings, Inc.  
Noah Verleun, President & CEO

**R20-1:** The commenter states, “Global Clean Energy Holdings, Inc. (“GCE”) previously provided the California Air Resources Board (“CARB”) with its comments on the Proposed 15-Day Changes to the Proposed Amendments to the Low Carbon Fuel Standard (“LCFS”) Regulations (the “15-Day Changes”) on August 27, 2024. We greatly appreciate the opportunity to have worked with CARB staff and Board Members over the last several weeks to discuss refinements to the initial draft 15-Day Changes needed to ensure an adequate runway to adjust feedstock plans. As proposed, the 15-Day Changes would cap the new Bakersfield Renewable Fuels Facility’s ability to generate LCFS credits for biomass-based diesel derived from soybean and canola oil, when it is just weeks away from production. Over \$1 billion has been invested in Bakersfield to transform the brownfield site into a California-made low-carbon fuel hub in the Central Valley.”

**Response:** The comment addresses general concerns related to the Bakersfield Renewable Fuels Facility. This comment does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**R20-2:** The commenter states, “GCE acknowledges and appreciates CARB’s efforts to update its environmental review to consider the 15-Day Changes via the Recirculated Draft Environmental Impact Analysis for the Proposed LCFS Regulation (“Recirculated DEIA”) (released August 16, 2024). GCE respectfully has concerns that the Recirculated DEIA does not fully consider the impacts of the proposed cap. As noted in our August 27, 2024, comment letter, the proposed cap may result in increased emissions impacts associated with the replacement of soybean and canola oil-derived diesel with other fuels that should be further considered in the environmental review.”

**Response:** Please refer to Master Response 2.

**R20-3:** The commenter states, “We are thankful for the collaboration and ongoing coordination with CARB staff and Board Members to incorporate modifications in upcoming amendments to ensure a level playing field and provide the needed runway to revise existing feedstock supply plans. We look forward to continuing to work with CARB to achieve our common goal of reducing greenhouse gas emissions and bringing cleaner air to California.”

**Response:** The comment is conclusory in nature and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this

comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R21**

2024/09/30

John Muir Project

Chad Hanson, Ph.D.

**R21-1:** While the commenter submitted this comment letter to the docket for the Recirculated Draft EIA, the comments do not relate to the Recirculated Draft EIA or the Proposed Amendments. Instead the comment letter is related to the Malcolm North presentation during the Expert Advisory Committee Meeting held on September 12, 2024 on the Assembly Bill (AB) 1757 discussion. In summation the commenter states, "...

On behalf of the John Muir Project of Earth Island Institute, I am submitting these expert scientific comments to address some highly misleading and scientifically inaccurate statements, promoting widespread logging under the guises of thinning, fuel reduction, and restoration/resilience, by U.S. Forest Service scientist Malcolm North.

The North et al. (2022) Article Has Been Scientifically Discredited and Has Been Found to Represent a "Falsification of the Scientific Record"; "Thinning" Kills Far More Trees Than It Prevents from Being Killed.

The Forest Service improperly relies on its North et al. (2022) study, which has been discredited and has been found to represent a "falsification of the scientific record" (Baker et al. 2023).

...

A pattern of omissions of peer-reviewed, published reply articles, which refuted and discredited U.S. Forest Service response articles, created a "falsification" of the scientific record regarding historical forest density and fire regimes. The corrected record shows that historical forests were much denser on average than assumed by the Forest Service and were shaped by mixed-severity fire, not merely low-severity fire.

**Letter attachments:** This letter included attached comments regarding the North Fork Environmental Assessment process conducted under the National Environmental Protection Act (NEPA) by the Forest Service. The commenter indicated "While the text of my comments are below, the figures are found in the additional attached comments (our comments on the North Fork logging proposal)."

**Response:** While this comment letter was submitted to the Recirculated EIA docket the comment does not raise significant environmental issues related to the analysis in the Recirculated or Draft EIA and does not require a written response under CARB's certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R22**

2024/09/30

Earthjustice

Nina Robertson and Matt Vespa

**R22-1:** The commenter states, “Earthjustice submits the following comments on the Recirculated Draft Environmental Impact Analysis (“RDEIA”) for the California Air Resources Board (“CARB”) Proposed Amendments to the Low Carbon Fuel Standard Regulation (“Proposed Amendments” or “Project”).<sup>1</sup> The fundamental purpose of the California Environmental Quality Act (“CEQA”) is to ensure decisionmakers and the public are informed of potential environmental consequences of proposed actions and to prevent significant, avoidable environmental harms. “Only through an accurate view of the project may outsiders and public decision-makers balance the proposal’s benefits against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal . . . and weigh other alternatives in the balance.” *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192. Here, rather than “demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action,” the RDEIA does the opposite, masking the severity of Project impacts and failing to adopt feasible measures to reduce the Project’s serious environmental harms.<sup>2</sup> *Laurel Heights Improvement Ass’n v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 392.

**Response:** The comment contains an introductory remark and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA.

**R22-2:** The commenter states, “First, rather than adequately disclose and mitigate impacts from the Project’s incentivization of crop-based biofuels, the RDEIA sweeps these problems under the rug. As described by numerous academic and other commentators through this rulemaking, the Low Carbon Fuel Standard (“LCFS”) program has experienced explosive growth in crop-based biofuel production, resulting in indirect land use changes (“ILUC”) that include deforestation and corresponding climate impacts and loss of biological resources. Moreover, as has been well-documented, diverting crops to biofuel production raises food prices, thereby exacerbating global poverty and chronic malnourishment. Rather than meaningfully assess these serious harms and disclose expert viewpoints, the RDEIA relies on an outdated model and unsupported assumptions to minimize the severity of Project impacts and entirely ignores the human health impacts of decreased food consumption resulting from the Project. While the Project includes a 20 percent volume limit on certain types of crop-based biofuels, this measure does not effectively mitigate these impacts because it enables resource shuffling and because excess fuels are not assigned a carbon intensity (“CI”) value sufficient to discourage program participation. In failing to adopt feasible mitigation measures, including applying limits to all crop-based biofuels, assigning excess production a CI score of ultra-low-sulfur diesel (“ULSD”), and imposing these limits immediately to avoid continued harms, the RDEIA violates CEQA. In addition, while the RDEIA claims the Project would result in substantial reductions in greenhouse gas (“GHG”) pollution, it employs double-counting,

improper baselines, and unsupported assumptions on the CI of crop-based fuels to significantly understate the GHG impacts of the Project.

Second, the RDEIA's analysis of the air quality impacts of biofuels use is deficient because it incorrectly claims emissions benefits from factors unrelated to the LCFS, ignores relevant evidence indicating that use of biofuels in California vehicles has higher pollution impacts than assumed, and fails to account for the effect of other incentives that impact the biofuel volumes consumed in California.

Third, the RDEIA fails to analyze the impacts of the Project's weak time-matching requirements for use of low-CI electricity for electrolytic hydrogen production. Overwhelming evidence shows that temporal matching of anything less than hourly could lead to substantial greenhouse gas emissions. The RDEIA ignores these impacts entirely. The RDEIA's analysis and mitigation of the greenhouse gas emissions from the production of hydrogen derived from fossil methane is also inadequate because it fails to account for the evidence that book-and-claim biomethane credits do not necessarily result in emissions reduction benefits.

Fourth, the RDEIA fails to analyze the impact of the Project on emissions of a wide range of pollutants that will likely occur as a result of the Project's support for polluting hydrogen production and biomethane, among other fuels, and fails to update the Health Impact Analysis despite its outdated Project assumptions.

Fifth, the RDEIA fails to adequately disclose and mitigate greenhouse gas emissions impacts from the Project's treatment of direct air capture ("DAC"), which could serve as an offset to fossil fuels, thereby resulting in their future use at the expense of zero-emissions alternatives.

Finally, the RDEIA's alternatives analysis is fundamentally compromised by CARB's failure to use a model capable of evaluating how program changes can increase zero-emission vehicle ("ZEVs") deployment and evaluate an alternative designed to accelerate ZEVs through limits on polluting fuels.

In light of these deficiencies, the RDEIA fails as an informational document under CEQA, mischaracterizing the Project's environmental impacts, ignoring relevant data, omitting analysis of critical impacts, and failing to require all feasible mitigation as required by law. The RDEIA also fails to address the concerns raised by LCJA, Communities for a Better Environment, and other members of the public in their comments on the DEIA, which therefore still apply to the updated review. CARB should accordingly address the many problems with its environmental review of the Proposed Amendments and recirculate its analysis for additional public review and comment."

**Response:** The comment provides a summary of detailed comments provide below. Please refer to Responses to R22-3 through R22-41.

**R22-3:** The commenter states, "**I. The EIA Fails to Adequately Analyze and Mitigate Impacts of Increased Crop-Based Biofuel Production Resulting from the Project.**

**A. The EIA's Analysis and Disclosure of the Potential Impacts from Increased Crop-Based Biofuel Production Is Deficient.**

The “fundamental purpose of an EIR is ‘to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment.’” *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (emphasis added). Rather than do so, the EIA relies on an outdated model with underlying assumptions contrary to real world observations that serve to understate the severity of Project impacts. The EIA fails to disclose these shortcomings or discuss the numerous and significant flaws that multiple experts have identified in the model CARB used to evaluate LCFS ILUC impacts. The EIA's cursory treatment of the significance of Project ILUC impacts on deforestation, biological resources, water quality, and greenhouse gas pollution and failure to disclose impacts to human health from increased food insecurity violates CEQA's fundamental requirement that an EIA make a “good faith effort at full disclosure,” including summarizing the main points of disagreement among experts. 14 Cal. Code Regs (“CEQA Guidelines”) § 15151; *see also Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1367.”

**Response:** Please refer to Master Response 2.

**R22-4: The commenter states, “1. The EIA Fails to Disclose Fundamental Flaws in the GTAP Model Identified by Numerous Academic Experts that Serve to Significantly Understate the Severity of the Multiple Impacts from Crop-Based Biofuel Production.**

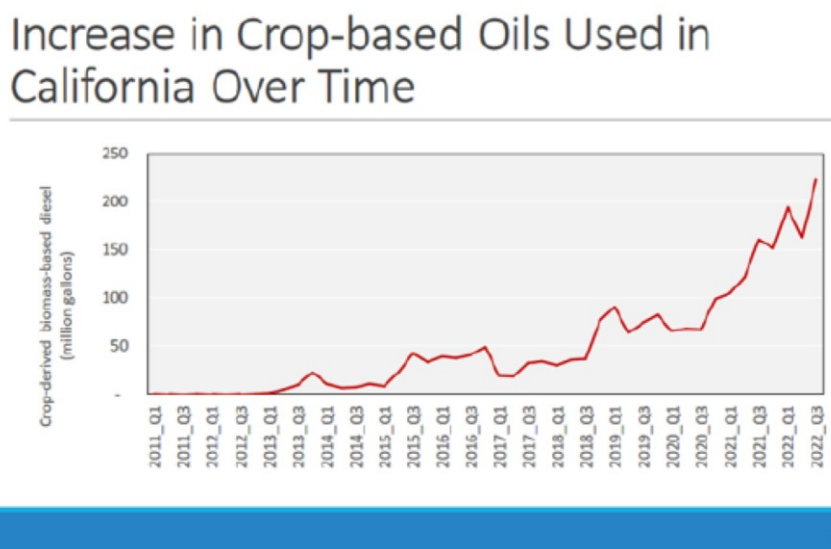
An EIA “must contain sufficient detail to help ensure the integrity of the process of decision-making by precluding stubborn problems or serious criticism from being swept under the rug.” *Save the Hill Group v. City of Livermore* (2022) 76 Cal.App.5th 1092, 1108. In direct contravention of CEQA, by exclusively relying on an outdated, flawed methodology and failing to address the damning critiques of academic experts, the RDEIA is intent on hiding the serious problems with increased crop-based biofuel production resulting from the Proposed LCFS Amendments from decisionmakers and the public.

CARB relies on the Global Trade Analysis Project (“GTAP”) model to assess ILUC impacts of the Project including forestry, agricultural, water quality, and biological resources.<sup>3</sup> The RDEIA states that “GTAP uses economic and trade data to model the land requirements – i.e., the amount of forest, pasture, and cropland converted – to meet an increase in biofuel demand.”<sup>4</sup> In their brief discussions of the model, neither the DEIA nor the RDEIA address or even so much as acknowledge significant concerns raised by numerous expert academics that GTAP's underlying assumptions lack evidentiary basis and its assessment of carbon intensity (“CI”) of crop-based biofuels significantly understates their ILUC impacts. In direct contravention of CEQA's informational mandates, the RDEIA misleads decisionmakers and the public on the potential severity of increased crop-based biofuel production caused by the Project and its corresponding impacts to deforestation, biological diversity, water quality, greenhouse gas pollution, and global food prices and food insecurity.”

**Response:** Please refer to Master Response 2.

**R22-5:** The commenter states, “As one example of fundamental flaws the RDEIA fails to acknowledge, the land use values used in LCFS currently, as modeled by GTAP, are not calibrated to assess the significant increase in renewable diesel (“RD”) volumes projected under the Proposed Amendments. The DEIA states “[t]he current LCFS regulation uses land use change emissions estimates by feedstock, which were last assessed between 2013-2015” absent any recognition that circumstances have changes in the decade since these estimates were adopted.<sup>5</sup> Registering their significant concerns, the UC Davis Policy Institute for Energy, Environment and the Economy informed CARB that the “[t]he GTAP model simulated a supply shock based on anticipated impacts of the U.S. Renewable Fuel Standard [RFS], as it was structured at the time. They did not account for the rapid growth in lipid-based fuels, nor the more than doubling of Renewable Volume Obligations for biomass-based diesel under the RFS that has occurred since the modeling that informed the LCFS land use change impact values was conducted.”<sup>6</sup> For example, to estimate ILUC emissions, GTAP assumes production of roughly 0.8 billion gallons of soy biodiesel.<sup>7</sup> But as shown in Figure 1, CARB’s February 2023 workshop presentation acknowledged the unprecedented use of crop-based oils in the program, primarily driven by soy, indicating financial or other barriers have been overcome that make using these feedstocks viable, even under increasingly stringent CI benchmarks.<sup>8</sup>

**Figure1: Staff February 2023 Workshop Slide Showing Crop-Based Oil Surge**



Since then, biomass-based diesel volumes have increased further. In the second quarter of 2023, RD volumes grew an alarming 18.9 percent in a single quarter.<sup>9</sup> In the third quarter, volumes climbed another 10.5 percent.<sup>10</sup> In contrast to the approximately 0.8 billion gallons of soy biodiesel assumed under GTAP, the LCFS program reported over 2.2 billion gallons of biomass-based diesel volumes (i.e. RD and biodiesel (“BD”)) in 2023.<sup>11</sup> Indeed, “[d]eployment of renewable diesel (RD) production capacity in the U.S. has greatly exceeded even very recent projections, and the majority of the production continues to flow to California.”<sup>12</sup> A recent

report by the U.S. Department of Agriculture (“USDA”) also highlights significant concerns about the rapid growth of RD production and its impact on global feedstock trade, singling out California’s LCFS as “the real driver for renewable diesel expansion.”<sup>13</sup> Yet the RDEIA fails to discuss or analyze the effect increased biodiesel production would have on the accuracy of GTAP outputs. By relying on a model with input values that fail to account for the significant growth in crop-based fuel to evaluate Project impacts, the RDEIA understates ILUC from the Project and its corresponding environmental consequences.”

**Response:** Please refer to Master Response 2.

**R22-6:** The commenter states, “Moreover, the harm from increased crop-based fuels is not contained just to diesel alternatives. While there is still significant room for expansion of diesel alternatives (1.4 billion gallons of fossil diesel were reported in the LCFS in 2023), those same feedstocks can be used in jet fuel alternatives. In 2023, the LCFS reported 23 million gallons of alternative jet fuel (“AJF”), commonly referred to as sustainable aviation fuel, or “SAF”) credited in the LCFS. According to CARB’s 2021 GHG inventory, there are an additional 2.7 billion gallons of jet fuel used in California.<sup>14</sup> Prior to 2021, CARB did not separately report virgin oil feedstocks used for RD production due to their low use. Looking at 2019, virgin soy and canola-based biodiesel totaled 4.5 million gallons. By 2023, BD and RD volumes using virgin feedstocks totaled 434 million gallons—two orders of magnitude higher in four years. There is an additional 279 million gallons of RD produced from undefined feedstocks, which likely include significant virgin oils.<sup>15</sup> This exponential growth in virgin oil biofuel production is thus an immediate concern and one the GTAP model relied on by CARB does not evaluate.”

**Response:** Please refer to Master Response 2.

**R22-7:** The commenter states, “The RDEIA similarly avoids any discussion of the damning critiques of GTAP by prominent academics, nor does it reevaluate ILUC impacts in light of these concerns. In *Evaluating the Economic Basis for GTAP and its Use for Modeling Biofuel Land Use*, Yale professor Steven Berry, who previously served as a consultant for CARB on economic issues related to the analysis of ILUC from biofuels, and Princeton Senior Research Scholar Timothy Searchinger concluded that “GTAP lacks a credible economic foundation” and “is particularly unable to credibly evaluate land use changes.”<sup>16</sup> As Berry & Searchinger observe, under the GTAP model, “estimated ILUC carbon losses from a gallon of corn ethanol and soybean biodiesel are extremely low, meaning there is little carbon cost for diverting even vast areas of prime farmland to biofuel production.”<sup>17</sup> GTAP reaches this outcome through a series of assumptions with little to no evidentiary basis, or in some cases directly contrary to available evidence. As one example, GTAP assumes at least an 80 percent increase in productivity of existing agricultural land in the United States and most regions to supply biofuels, such as by increasing the acres of land that produce two crops a year, known as “double-cropping,” thereby minimizing indirect land use changes.<sup>18</sup> Yet while there appeared to be a small increase in double-cropping in the U.S. in the first few years of the renewable fuel mandate, double cropping over the last five years was roughly 40 percent lower than between 2007-2011 and among the lowest level ever recorded in USDA data.<sup>19</sup> Nowhere does the



RDEIA acknowledge that key assumptions underlying GTAP's assessment of carbon intensity of crop-based biofuel production has not been borne out by reality."

**Response:** Please refer to Master Response 2.

**R22-8:** The commenter states, "A recent analysis by the U.S. Environmental Protection Agency ("EPA") underscores the significant variability among GHG lifecycle models, particularly in estimating LUC impacts <sup>20</sup> Despite this variability, the study raises concerns that the current LUC values may be underestimated even at current levels. The EPA evaluated five models under various scenarios, including a soybean oil biodiesel shock, which simulated an additional one billion gallons of U.S. soybean oil biodiesel consumption annually.<sup>21</sup> Across all models, this shock led to increased land use change emissions compared to a reference case. In each of the five models, the one-billion-gallon shock resulted in greater land use change emissions from the reference case, ranging from an increase in land use change CI of 10 kg CO<sub>2</sub>e/MMBTU<sup>22</sup> for GTAP to 295 CO<sub>2</sub>e/MMBTU for the Applied Dynamic Analysis of Global Economy ("ADAGE") model.<sup>23</sup> This is alarming not only from a soy oil perspective but also given the substitutability of feedstock oils and the potential market growth in California and elsewhere. Indeed, while CARB often seeks to serve as a model for adopting policies other states can follow, replication of the LCFS's incentivization of crop-based biofuels in other states would aggravate the already significant impacts from crop-based biofuels on deforestation, biological resources and global food security."

**Response:** Please refer to Master responses 2 and 5.

**R22-9:** The commenter states, "GTAP can also understate ILUC impacts because it only allows managed lands to be repurposed for productive uses, excluding the conversion of unmanaged lands like rainforests or grasslands. Additionally, GTAP assumes that all new soybean oil biodiesel production occurs in the U.S., with minimal associated land use change, "implying a net reduction in food consumption."<sup>24</sup> These findings suggest that existing LUC estimates, particularly those generated by GTAP, likely significantly underestimate the true environmental impacts of increased biofuel production. As researchers at UC Davis noted, "[g]iven the uncertainty involved in ILUC assessment, and the asymmetric risks of overestimation vs. underestimation of ILUC impacts, adopting a value based on an estimate from a single model, especially one at the lower end of the uncertainty range established by multiple models, creates substantial risk of unrecognized GHG emissions, environmental harm, and stranded assets."<sup>25</sup>

While the RDEIA acknowledges ILUC impacts to forestry, agricultural, water quality, and biological resources are significant, its refusal to discuss the serious concerns raised by prominent academics and government institutions over the multiple ways in which the severity of these impacts is likely understated by GTAP violates CEQA. As courts have held, "an EIR's designation of a particular adverse environmental effect as 'significant' does not excuse the EIR's failure to reasonably describe the nature and magnitude of the adverse effect."

*Cleveland Nat'l Forest Foundation v. San Diego Assn. of Governments* (2017) 3 Cal.5th 497, 514. Yet the RDEIA misleads decisionmakers and the public by instead attempting to minimize

concerns, stating “[w]ith continued increased demands on biofuel crops the Proposed Amendments could contribute to increased direct and indirect land use change to accommodate new croplands, but the likelihood of this is at least partially (and potentially fully) accounted for by the LUC scores added to crop-derived pathways.”<sup>26</sup> Indeed, the RDEIA’s suggestion that ILUC impacts are potentially fully accounted for by LUC scores is directly contravened by the explosive growth in crop-based biofuels as a result of the LCFS program and model assumptions that do not account for increased ILUC impacts as a direct consequence of this growth.”

**Response:** Please refer to Master response 2.

**R22-10:** The commenter states, “**2. The RDEIA Fails to Disclose the Impact of Increased Crop-Based Biofuel Production on Global Food Insecurity and Its Corresponding Impacts on Public Health.**”

Potential impacts to public health fall within the scope of analysis required by CEQA. See, e.g., *Sierra Club v. County of Fresno* (“*County of Fresno*”) (2018) 6 Cal.5th 502, 517. CEQA similarly requires public agencies to analyze the potentially significant impacts of a proposed project that may occur in “the area which will be affected by [the] proposed project.” Guidelines § 15360; Public. Res. Code § 21060.5. Accordingly, the global public health impacts of increased crop-based biofuel production resulting from the Project must be disclosed as part of environmental review. Yet despite assuming crop-based biofuel production reduces the demand for food by increasing its price,<sup>27</sup> the RDEIA ignores corresponding impacts to global health from decreased food consumption in direct contravention of CEQA’s informational mandates.

When assessing adequacy of environmental review, “courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.” *Count of Fresno*, 6 Cal.5th at 510. Accordingly, even “if it is not scientifically possible to do more than has already been done to connect [project] effects with potential human health impacts, the EIR itself must explain why, in a manner reasonably calculated to inform the public of the scope of what is and is not yet known about the Project’s impacts.” *Id.* With roughly 800 million people facing hunger every day of their lives,<sup>28</sup> the impact of biofuel production on food security is well documented. Increased biofuel production raises food prices, thereby contributing to global poverty and chronic undernourishment.<sup>29</sup> Biofuels can threaten food security and trigger levels of hunger to be more serious “because sizeable percentages of food crops, which are supposed to be used for food consumption, are diverted to biofuel production and will continue to be diverted in the future as the production of biofuels expands.”<sup>30</sup> Indeed, the GTAP model CARB relies upon for estimates of ILUC from corn ethanol assumes roughly half of the food calories are not replaced due to increased food prices.<sup>31</sup> As noted by Jim Duffy, former CARB Branch Chief overseeing the LCFS program, “a portion of the GHG emission reductions that CARB is attributing to crop-based biofuels directly results from the most food insecure populations in the world eating less.”<sup>32</sup>

As researchers studying the effects of biofuels policy have observed, “[w]hile lower food consumption may not translate directly into nutritional deficits among wealthy households, any decline in consumption will have a severe impact on households that are already malnourished.”<sup>33</sup> In failing to identify and discuss the impact of the Project on exacerbating global food insecurity and world hunger, the RDEIA violates CEQA. County of Fresno, 6 Cal.5th at 510 (“[t]he relevant informational document here is the EIR, and the EIR must communicate not to the reviewing court, but ‘the public and the government officials deciding on the project,’” regarding potential impacts).”

**Response:** Please refer to Master Responses 2 and 3.

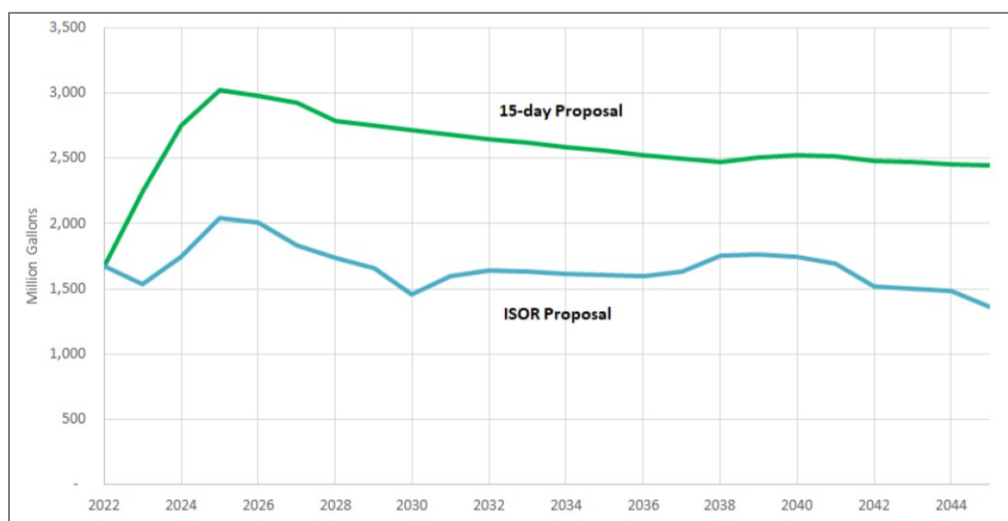
**R22-11:** The commenter states, “**B. The EIA Fails to Adopt All Feasible Mitigation to Reduce Impacts from Crop- Based Biofuel Production, and What Little Mitigation Is Adopted Is Ineffectual and Speculative.**”

The DEIA and RDEIA acknowledge ILUC from crop-based biofuel production has potentially significant impacts on agriculture and forestry, biological resources, and water quality.<sup>34</sup> Where, as here, environmental review has identified significant impacts from the Project, “the EIR must propose and describe mitigation measures that will minimize the significant environmental effects that the EIR has identified.” *Napa Citizens for Honest Gov’t v. Napa County Bd. of Supervisors* (2001) 91 Cal.App.4th 342, 360. CEQA requires that agencies “mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so.” Pub. Res. Code § 21002.1(b). Mitigation of a project’s significant impacts is one of the “most important” functions of CEQA. *Sierra Club v. Gilroy City Council* (1990) 222 Cal.App.3d 30, 41. Therefore, it is the “policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects.” Pub. Res. Code § 21002; See *Laurel Heights I*, 47 Cal.3d at 400–401.

To comply with CEQA, CARB must ensure mitigation measures are “fully enforceable” through permit conditions, agreements, or other legally binding instruments. Pub. Res. Code §§ 21002, 21081.6(b); CEQA Guidelines §§ 15002(a)(3), 15126.4(a)(2). To be enforceable, a mitigation measure must be detailed and specific. California courts have clarified that an EIR is inadequate where its proposed mitigation measures are so undefined that it is impossible to evaluate their effectiveness. *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61, 79. In particular, a mitigation measure must include criteria or performance standards against which the mitigation’s actual implementation can be measured. See *San Joaquin Raptor Rescue Ctr. v. County of Merced* (2007) 149 Cal.App.4th 645, 670 (“County of Merced”). The reader must be able to discern what steps will be taken to mitigate the project’s impacts. Id. Without such detail, there is no way for decision-makers and the public to weigh whether the proposed measures will sufficiently mitigate a project’s impacts, causing the EIR to fail its core, informational purpose.

Here, the RDEIA falls far short of CEQA’s mitigation requirements. As an initial matter, CARB largely attempts to shirk responsibility for Project impacts despite Project design being the driving force for these impacts. What few measures CARB does propose are overly vague or ineffectual at addressing the significant impacts from crop-based biofuel production resulting from the Project. Indeed, as shown in Figure 2, the 15-day changes proposed by CARB staff that are the focus of the RDEIA show projected volumes of RD are actually 50% higher than those modeled in CARB’s original proposal, which did not include additional mitigation beyond a 20 percent credit limit on crop-based diesel. The issues related to potential biofuel volume increases were identified prior to the revised projected volumes. The problem becomes all the more immediate under the increased volumes that CARB projects will come into California, as demonstrated in Figure 2.

**Figure 2. Renewable Diesel and Biodiesel Volumes Projected Over Time**



Data Source: CARB.<sup>35</sup>

While the proposed 20 percent credit limit on crop-based diesel is an acknowledgment of the significant environmental consequences of unchecked production, the measure is ineffective at mitigating these impacts. Additional feasible mitigation measures are necessary to reduce these impacts, including but not limited to:

- As recommended by numerous stakeholders, CARB should adopt a volume limit on lipid biofuels. To the extent CARB continues with a percentage-based approach, it should be revised to include all virgin lipid fuels rather than only those derived soybean and canola and apply to SAF.
- Rather than assign overages the benchmark CI, CARB should assign these fuels the CI of ultra-low sulfur diesel to effectively disincentivize their participation.
- Apply limits immediately rather than delay implementation by three years as currently proposed.”

**Response:** Please refer to Master Response 2 and response to comments 299-16 and 299-18 regarding mitigation measures and feasibility. Please refer to response to comment R22-19 regarding volume limits on lipid biofuels as a mitigation measure. Please refer to response to comment R22-18 regarding including all virgin lipid fuels in a percentage-based approach and applying that approach to SAF as a mitigation measure. Please refer to response to comment R22-19 regarding assigning overages the CI of ultra-low sulfur diesel as a mitigation measure. Please refer to response to comment R22-20 regarding applying limits immediately as a mitigation measure.

**R22-12: The commenter states, “1. CARB’s Effort to Evade Responsibility for Project Impacts Is Inconsistent with CEQA.”**

Despite controlling the parameters of the LCFS program, the EIA improperly seeks to absolve CARB of its responsibility over Project impacts. For example, the DEIA states that “[b]ecause CARB has no land use authority, mitigation is not within its purview to reduce potentially significant impacts to less-than-significant levels.”<sup>36</sup> CEQA requires CARB to determine whether changes or additions can be made to the Proposed Amendments themselves that will reduce the severity of their significant environmental impacts. CEQA Guidelines § 15126.4(a)(2) (“[i]n the case of the adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design”). CARB clearly has the authority to make changes or additions to its own Proposed Amendments, which will lessen the severity of their environmental impacts. Any excuse not to do so based on a lack of local land-use or other local permitting authority constitutes grave legal error.”

**Response:** Please refer to responses 299-16 and 299-18.

**R22-13: The commenter states, “2. The Mitigation Measures the RDEIA Does Adopt Enable Resource Shuffling and Therefore Fail to Effectively Mitigate ILUC Impacts from Increased Crop-Based Biofuel Production.”**

**a) Tracking Crop-Based and Forestry-Based Feedstocks to Point of Origin Does Not Effectively Mitigate Project Impacts.**

The RDEIA states that “CARB staff are proposing to require pathway holders track crop-based and forestry-based feedstocks to their point of origin and require independent feedstock certification to ensure feedstocks are not contributing to impacts on other carbon stocks like forests.”<sup>37</sup> This measure is not effective in mitigating the Project’s significant ILUC impacts from increased crop-based biofuel production. As observed by researchers at UC Davis, feedstock sustainability certifications “are incapable of mitigating indirect risks like ILUC, which are driven by aggregate demand within a given market, which in the case of vegetable oils, is effectively global.”<sup>38</sup> Nor would the proposed certification requirement succeed in stabilizing the credit price because “[t]here is ample potential supply of crop-based vegetable oil that would meet proposed sustainability criteria.”<sup>39</sup> The proposed certification would merely direct that feedstock to biofuel production, forcing the current consumers of that oil to find other oil

supplies, which have historically included unsustainable alternatives that require conversion of additional land into cultivated use.<sup>40</sup> Accordingly, the DEIA misleads decision-makers and the public in claiming that “[t]he proposed sustainability criteria for crop-based feedstocks and forest biomass for biofuel production would help protect against potential future land use impacts as it disincentivizes sourcing biofuel feedstocks with higher land-use change risks.”<sup>41</sup>

Indeed, neither CARB’s current ILUC factors nor the proposed certification standard account for the reality that waste- or residue-derived biofuels still pose significant risks of emissions increases through shuffling. CARB’s assumption that ILUC factors for waste- and residue-derived fuels have zero or very small indirect emissions is outdated.<sup>42</sup> Used cooking oils and animal fats can divert these products from other non-human consumption ends like livestock feed or consumer products, which then end up needing additional oils to substitute.<sup>43</sup> In fact, the proposed certification system would create a powerful incentive to pass off conventional biofuels as waste- and residue-based fuels. Skyrocketing global imports of used cooking oil (including recent pathways approved by the LCFS for California to import Used Cooking Oil from Southeast Asia and Oceania) have been beleaguered by widespread incidence of fraud. Several EU member states have launched national and criminal investigations into fraudulently labeled used cooking oil in their biofuel markets. Germany and Ireland launched such investigations in 2023, and the Netherlands’ ongoing criminal investigation has identified that a third of the biodiesel reported as used cooking oil could be virgin oils.<sup>44</sup>

In addition, neither the DEIA nor the RDEIA provide sufficient detail on how certification will comply with the proposed amendments (including, e.g., which certification bodies would be eligible, what metrics they would be required to assess, and how CARB will verify the work of certifiers). The RDEIA’s deferral of these critical details is inconsistent with CEQA. CEQA Guidelines § 15126.4; County of Merced, 149 Cal.App.4th at 670.”

**Response:** Please refer to Master Response 2.

In regard to the adequacy of mitigation measures in the EIA, the provision the commenter refers to is part of the sustainability criteria for crop-based biofuels in the project description of the Proposed Amendments, as quoted from section 2.0.D.10 of the Recirculated EIA. The sustainability criteria reduce the risk that rapid expansion of biofuel production and biofuel feedstock demand could result in deforestation or adverse land use change. While the sustainability criteria do reduce environmental impacts, they are part of the project, or “the whole of an action which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.” (CEQA Guidelines, § 15378(a).) The sustainability criteria are part of the proposed project, which is considered when evaluating compliance responses, findings of significance, and mitigation measures. Mitigation measures, by contrast, would be a “subsequent action proposed to mitigate or offset the alleged adverse environmental impacts.” (*Berkeley Hillside Preservation v. City of Berkeley* (2015) 241 Cal.App.4th 943, 961.) Because they are part of the proposed project’s design, the sustainability criteria would not be appropriately evaluated as a mitigation measure or analyzed under CEQA Guidelines section 15126.4.

The sustainability criteria will help reduce rapid expansion that could lead to deforestation, and therefore CARB disagrees with the commenter in terms of the criteria's effectiveness. Even with the criteria being part of the program, the EIA disclosed potentially significant impacts to agriculture and forestry resources because CARB cannot conclude with certainty that the sustainability criteria will in all cases avoid the impacts at issue here.

**R22-14: The commenter states, “b) The RDEIA’s Mitigation Measure to Only Remove Palm Oil from Credit Generation Is Ineffective Because It Will Simply Result in Resource Shuffling.**

The RDEIA states that CARB staff are proposing to remove palm derived fuels from eligibility for credit generation, given palm oil has been demonstrated to have the highest risk of being sourced from deforested areas.<sup>45</sup> The exclusion of palm oil is a distraction from effective mitigation measures. Per Staff, palm oil has not been reported in the program, likely owing to the current LUC CI value of 70 g/MJ.<sup>46</sup> Direct contracts for palm oil for LCFS are not the issue. Rather, impacts arise because soy and palm oil are near-perfect substitutes. Recent studies have pointed this out, including one that shows that the United States’ increased consumption of soy biofuels has indirectly increased demand for palm oil to substitute in cooking.<sup>47</sup> In other words, with soy oil diverted to the LCFS program, use of palm oil for cooking increases, along with the significant climate impacts from increased deforestation for its cultivation. As long as demand for soy consumption continues to surge in California due to the LCFS program, this equates to greater consumption of palm oil elsewhere. The RDEIA’s failure to address this dynamic renders this mitigation measure inadequate under CEQA and underscores the flaws in only seeking to limit certain types of virgin crop oils in the program.<sup>48</sup>

**Response:** The proposal to remove palm-derived fuels from eligibility for credit generation in section 95482(f) of the LCFS regulation is discussed as part of the project description in section 2.0.D.10 of the EIA. Although that amendment concept is distinct from the amendment concept proposal to add sustainability criteria for crop-based biofuels with a new subsection 95488.9(g), the two concepts are thematically related by both supporting policy signals to encourage the use of sustainable feedstocks, and thus appropriately discussed together in section 2.0.D.10 of the EIA. Please refer to response to comment R22-13, which generally applies to the proposal to remove palm-derived fuels from eligibility for credit generation..

**R22-15: The commenter states, “c) The RDEIA’s Proposed 20 Percent Credit Limit on Virgin Soybean and Canola Oil Is Not Effective in Mitigating Impacts from Crop-Based Diesel Production.**

In the Proposed Amendments, “Staff is proposing to provide credits for biomass-based diesel produced from virgin soybean oil and canola oil for up to 20 percent of annual biomass-based diesel reported on a company-wide basis. Quantities of soybean or canola oil biomass-based diesel in excess of 20 percent would be given the carbon intensity for the applicable year’s diesel fuel benchmark from Table 2 of the LCFS regulation, or the certified carbon intensity of the applicable fuel pathway; whichever is higher.”<sup>49</sup> While this measure is an acknowledgement of the need to limit the significant harms from increased crop-based biofuel

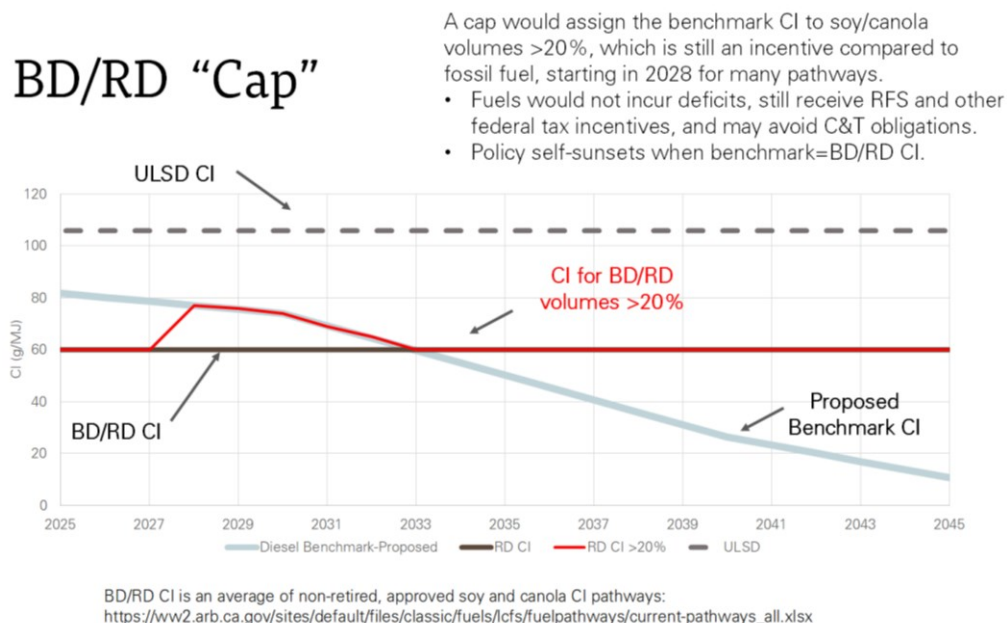
production, it is not effective at mitigating these harms for at least the following two reasons: 1) the failure to extend this limit to all virgin crop oils and sustainable aviation fuel will result in resource shuffling; and 2) linking surplus production to the applicable year's diesel fuel benchmark still provides significant production incentives.

First, CARB's proposal to limit this measure to virgin soybean and canola oil ignores the interchangeability of vegetable oils. As explained in comments by Berry & Searchinger, "increases in demand for any vegetable oil will cause comparable increases in demand for vegetable oil in general and will therefore elicit very similar market and land responses. There is no reason to exempt corn or sunflower oil."<sup>50</sup> Accordingly, the lack of limitations on corn and sunflower oil in the Proposed Amendments would simply result in larger amounts directed to biofuels, with soybean and canola oil substituting for corn and sunflower oil in non-biofuel applications and no net change to ILUC impacts. To be effective at mitigating ILUC impacts, all virgin vegetable oils must be included within this measure. Shuffling will likely also occur because the proposed measure does not include sustainable aviation fuels. Yet the RDEIA fails to analyze these substitution effects and the impacts of ILUC and other impacts from substitute feedstocks.

Second, the RDEIA makes the unsupported assertion that "the proposed regulation is not expected to result in significant increases in soy and canola feedstock utilization for biomass-based diesel, given that volumes in excess of 20 percent, which matches 2023 feedstock composition levels across all pathways, will not be eligible for crediting."<sup>51</sup> However, even with volumes above 20 percent assigned to the benchmark CI as contemplated under the RDEIA, producers still have an incentive to deliver fuel to California. They would avoid generating deficits, benefit from higher diesel prices in California, potentially avoid Cap-and-Trade obligations, and continue to receive federal subsidies such as the RFS and Blender's Tax Credit. In addition, due to the proposed auto-acceleration mechanism ("AAM"), the benchmark is likely to equal the CI of RD within three years of it going into full effect. For example, the average of current soy and canola BD/RD pathways is 60 gCO<sub>2</sub>e/MJ. Under the proposed benchmark schedule, RD/BD volumes exceeding 20% would lose a subsidy equivalent to a CI difference of 17 gCO<sub>2</sub>e/MJ, reducing to 9 gCO<sub>2</sub>e/MJ by 2031.<sup>52</sup> Should the AAM be triggered in 2028 and 2030, even this small difference will disappear by 2031.<sup>53</sup> Therefore, the proposed limits provide only a short-term disincentive that phases out as the benchmark CI decreases to match RD's CI. Accordingly, assigning excess biofuels to the CI benchmark does not send a strong enough signal to discourage production and its corresponding impacts. CARB itself recognizes that assigning fuels the ULSD benchmark is an effective deterrent, as it has proposed assigning ULSD to the following: biofuels produced with uncertified biomass,<sup>54</sup> fuels produced with palm or palm derivatives,<sup>55</sup> and RNG used in compressed natural gas ("CNG") vehicles after 2040.<sup>56</sup> The contrast between the effectiveness of assigning the ULSD benchmark compared to the RDEIA's proposed Benchmark CI is illustrated below in Figure 3 below.



**Figure 3: Carbon Intensities of ULSD, Proposed Benchmark, and Proposed CI for Biofuels Over the 20% Limit"**



**Response:** Please refer to Master Response 2 regarding land use change, resource shuffling, and why the 20% crop oil feedstock crediting limitation is an adequate deterrent from deforestation while still encouraging growth of sustainable, low-carbon feedstocks to displace fossil fuels.

While the comment describes the 20% crop oil feedstock crediting limitation as a mitigation measure under CEQA, the provision is identified in the discussion of Changes to Eligibility of Biomass-based Diesel in the project description of the Proposed Amendments in section 2.0.D.8 of the Recirculated EIA. The 20% limitation is designed to avoid sending a long-term signal for crop oil to serve California demand, and is part of the project, or “the whole of an action which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.” (CEQA Guidelines, § 15378(a).) The limitation is part of the proposed project, which is considered when evaluating compliance responses, findings of significance, and mitigation measures. Mitigation measures, by contrast, would be a “subsequent action proposed to mitigate or offset the alleged adverse environmental impacts.” (*Berkeley Hillside Preservation v. City of Berkeley* (2015) 241 Cal.App.4th 943, 961.) Because they are part of the proposed project’s design, the 20% crediting limitation would not be appropriately evaluated as a mitigation measure or analyzed under CEQA Guidelines section 15126.4. Regardless, the crediting limitation helps guard against increases in virgin feedstock production.

**R22-16:** The commenter states, “**d) Executive Officer Discretion to Assign More Conservative LUC Values at Some Future Juncture Does Not Meet CEQA’s Mitigation Standards.**”

The RDEIA states that “the Proposed Amendments incorporate a mechanism to assign more conservative LUC carbon intensity values to feedstock/fuel combinations from regions with higher risk.”<sup>57</sup> The proposed provision would grant the Executive Officer the authority to assign a more conservative land use change (“LUC”) value.<sup>58</sup> This measure does not confer a legally binding obligation and therefore does not comply with CEQA mitigation requirements. Pub. Res. Code § 21081.6(b) (“A public agency shall provide that measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures.”).

In addition, there is no legitimate basis for CARB to delay adjusting CI values. As set forth above, the most recent update was in 2015—well before the recent surge in renewable diesel production that increases ILUC pressures and corresponding CI values of crop-based biofuels. Deferring action by adopting a provision allowing for potential future adjustment provides no assurance impacts will be mitigated nor does it address impacts that will occur prior to any such adjustment being implemented.

CARB’s deferral of adjusting LUC values to discretionary action by CARB’s Executive Officer action also thwarts “CEQA’s goals of public participation and informed decision-making.” *Save Our Capitol! v. Dept. of General Services* (2023) 87 Cal.App.5th 655, 701. Currently, much of the LUC evaluation is conducted by the fuel applicant, with limited opportunities for public input or scrutiny. This process lacks the necessary rigor and accountability to ensure that LUC values are accurately assessed and applied. The new proposed measure exacerbates this problem by centralizing more decision-making power with the Executive Officer, without providing any clear mechanisms for public oversight or involvement. Accordingly, the proposed measure is wholly insufficient to mitigate Project impacts and fails to meet the CEQA’s standards of transparency and public participation that are critical for sound governance.”

**Response:** The proposed amendment provisions to subsection 95488.3(d) of the LCFS regulations introducing criteria for potential adjustments of LUC values that the commenter is referring to is a project design feature, not a mitigation measure applied after the finding of significance. As explained in response to comment R-22-13, Mitigation measures, by contrast, would be a “subsequent action proposed to mitigate or offset the alleged adverse environmental impacts.” (*Berkeley Hillside Preservation v. City of Berkeley* (2015) 241 Cal.App.4th 943, 961.) Because the proposed amendment to subsection 95488.3(d) is part of the proposed project’s design, the Executive Officer’s authority to assign a more conservative LUC value would not be appropriately evaluated as a mitigation measure or analyzed under CEQA Guidelines section 15126.4.

Even if it were viewed as a mitigation measure, the provision at issue does not represent improper deferred mitigation, because the provision is preventative and based on specified and objective criteria standards. The provision is preventative because the determination of

LUC values is within the scope of the LCFS fuel pathway application process. This process ensures that LUC values are determined for any particular fuel before eventual potential CARB certification of a fuel pathway, thus incorporating appropriate LUC policy signals into the carbon intensity modeling and associated crediting framework before fuels associated with a certified fuel pathway are reported as supplied for use in California and generate associated LCFS credits. The objective criteria standards introduced to be the basis of LUC adjustment determinations, if appropriate, are the use of the best available empirical data, including but not limited to satellite-based remote sensing data for land cover monitoring, crop yields, and emission factors from the AEZ-EF model or carbon stock datasets. Please also refer to Master Response 2.

**R22-17: The commenter states, “3. CEQA Requires CARB to Adopt Additional Feasible Mitigation to Address Resource Shuffling and Mitigate ILUC Impacts.**

As set forth in previous comments by Earthjustice and numerous other stakeholders, a volume limit can effectively mitigate the severe impacts from unconstrained lipid biofuel production.<sup>59</sup> Instead, CARB has proposed a percentage limit, which, as described above, is ineffective at limiting biofuels as currently designed. As an initial matter, CARB has not explained why adoption of a volume limit is infeasible or, as discussed below, evaluated this option in its flawed and narrow alternatives analysis. To the extent CARB continues to pursue a percentage credit limit, the RDEIA fails to adopt all feasible mitigation measures to reduce the significant ILUC impacts from crop-based biofuel production. CEQA explicitly acknowledges that feasible mitigation measures can include changes that are incorporated into the regulation itself. CEQA Guidelines § 15126.4(a)(2). Each of the following mitigation measures is feasible and within CARB’s authority to incorporate in the Proposed Amendments. CARB’s failure to do so would constitute a clear violation of CEQA.”

**Response:** Please refer to Master Response 2 and response to comments 299-16 and 299-18.

**R22-18: The commenter states, “a) Extend Credit Limit to All Virgin Vegetable Oil-Based Fuels and Apply Limit to Sustainable Aviation Fuels.**

To address resource shuffling, the RDEIA should be revised to extend the 20 percent limit of crop-based fuel production to all virgin vegetable oils, including corn and sunflower oil, rather than only soybean or canola oil as currently contemplated. To address the same resource shuffling concerns, CARB should extend the measure to SAFs. Making these tweaks to CARB’s currently proposed measure is feasible and critical to reducing the significant impacts of crop-based diesel and jet fuel production.

Any concern that applying caps on corn oil as a feedstock for diesel and jet fuels is infeasible because it would interfere with California’s ethanol blending requirements is without merit. The ethanol blending mandates specifically apply to gasoline, not to diesel or jet fuels. Therefore, applying a credit-generation limit to lipids used for diesel or jet fuel alternatives would not impact corn oil availability for ethanol production.<sup>60</sup>

**Response:** Please refer to response to comments 299-16 and 299-18 and Master Response 2. CARB took a reasonable, programmatic approach to incorporate feasible mitigation measures into the Proposed Amendments. Please refer to response 299-16. “Feasibility’ under CEQA encompasses a range of considerations, including ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.” *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17.) As described in Master Response 2, the provision the commenter is referring to was expanded in the second 15-day changes to the Proposed Amendments to cover sunflower oil, in addition to soy and canola oil, in response to public feedback that sunflower oil posed the largest risk for feedstock shuffling. Distillers corn oil is an inedible byproduct of corn ethanol production and does not pose the same sustainability concerns as dedicated energy feedstock crops. It is instead included as a specified source feedstock in section 95488.8(g) of the regulation, along with other waste/byproduct feedstocks, with full chain of custody traceability. With regard to the aviation sector, staff is no longer proposing to remove any part of the existing exemption for fossil jet in this rulemaking, and the volumes of sustainable aviation fuel used in California to-date have been minor compared to the quantities of on-road biomass-based diesel. Staff focused this provision on the on-road sector in proportion to the size of that alternative fuels market to-date.

**R22-19: The commenter states, “b) Assign Excess Fuels a CI Value of Ultra Low Sulfur Diesel (“ULSD”) Rather than the CI Benchmark.**

As set forth above, assigning overages of crop-based fuels the benchmark CI does not send a signal sufficient to disincentivize their production. Instead of using the benchmark CI, CARB should set a firm cap or, in the alternative, assign overages with a CI of ULSD. This provides a stronger and more durable signal and is eminently feasible as demonstrated by CARB’s assignment of the CI for ULSD to other fuel pathways it has deemed problematic. For example, in the case of palm-derived fuels, CARB recognized in the Initial Statement of Reasons (“ISOR”) for the Project that “assigning the ULSD CI ensures that the fuel would receive as many deficits as fossil diesel per gallon. Guaranteed deficit generation, coupled with increased cost of transporting palm-derived fuels to California from other countries, should continue to send a strong signal that disincentivizes use of this fuel.”<sup>61</sup> CARB has similarly proposed assigning a ULSD CI to feedstocks that are not certified by January 1, 2028 because “[t]his deficit generation sends a strong signal that disincentivizes use of non-certified crop- and forestry-based feedstocks.”<sup>62</sup> Similarly, the RDEIA should be revised to assign excess crop-based fuel production the ULSD CI to provide this same strong disincentive to participate in the LCFS program.”

**Response:** Please refer to Master Response 2 and response to comments 299-16 and 299-18. CARB took a reasonable, programmatic approach to incorporate feasible mitigation measures into the Proposed Amendments. Please refer to response 299-16. “Feasibility’ under CEQA encompasses a range of considerations, including ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.” *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17.) As described in Master Response 2, assigning a volumetric cap on

biofuels, which would likely be similar in effect to the assignment of the ULSD CI value and associated deficit generation suggested by the commenter, would likely increase fossil diesel consumption and increase both GHG emissions and air pollution. The proposal would signal that oil crop derived fuels above the 20% crediting limit have the same carbon intensity and environmental harm as fossil-derived fuels, which staff does not expect to be an accurate reflection of these generally more beneficial fuels. This would contradict the program objective to incentivize alternative fuel production and refueling infrastructure buildout needed to meet California's long-term climate goals and reduce dependence on petroleum fuels. This also could potentially exacerbate existing air quality challenges in the State. The intent of the provision is to remove support for fuels in excess of the limit described in the provision, which is accomplished by assigning neither credits nor deficits to the fuel.

**R22-20:** The commenter states, “**c) Implement Provisions to Limit Crop-Based Biofuels Immediately.**”

To mitigate the current deforestation and global food price harms from the rampant growth of crop-based fuels, CARB should eliminate the proposed provision that would allow producers to continue producing in excess of the 20% for the next three years. As noted in comments by the International Council on Clean Transportation, CARB's “design of the grandfathering provisions could allow for a significant expansion of vegetable oil volumes over present-day consumption.”<sup>63</sup> Because crediting restrictions would not need to be adhered to until 2028, this “creates room under the crediting limit for refinery expansion and higher soy and canola blend rates in the interim years” and corresponding impacts from these activities.<sup>64</sup> Eliminating this provision avoids these significant harms.”

**Response:** Please refer to Master Responses 2 and 3 and response to comments 299-16 and 299-18. “Feasibility’ under CEQA encompasses a range of considerations, including ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.” *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17.) Applying the provision immediately for existing fuel pathways in the program would not be feasible, given the multi-year, long-term nature of feedstock supply contracts. The proposed amendments allow for a phase-in of the provision over a feasible timeframe.

**R22-21:** The commenter states, “**C. CARB Overstates the Greenhouse Gas Reductions from Biofuels.**”

With regard to the Project's greenhouse gas impacts, the RDEIA concludes that “while some small level of GHG emissions would be emitted from the reasonably foreseeable compliance responses to the Proposed Amendments, these emissions would be substantially less than the emissions benefits of implementation of the Proposed Amendments.”<sup>65</sup> The RDEIA's claim that the Project would substantially lessen greenhouse gas emissions does not withstand scrutiny. In direct contravention of CEQA, CARB relies on double-counting benefits attributable to other programs, unsupported assumptions, and use of improper baselines to reach its conclusion that the Project would purportedly reduce greenhouse gas pollution.

Given these significant flaws, as well as CARB's failure to accurately account for greenhouse gas emissions from hydrogen production as discussed in Sections III.B and IV.B, the RDEIA fails as an informational document by omitting any disclosure that the Proposed Amendments may increase greenhouse gas pollution. This outcome runs counter the Project's Objective to align with "with California's 2030 GHG target to reduce GHG emissions by 40% from the 1990 levels as enacted through Senate Bill (SB) 32 (Pavley, Chapter 249, Statutes of 2016)"<sup>66</sup> as well as the Objective to "Incentivize fuel production and refueling infrastructure buildout needed to meet California's long-term climate goals and reduce dependence on petroleum fuels, including opportunities to leverage federal funding for low-carbon hydrogen production and zero emission vehicle ("ZEV") fueling, and support the transition of biomethane fuel pathways for combustion out of transportation," among others.<sup>67</sup> It would also render the Project inconsistent with the AB 32, the statute authorizing CARB to implement the LCFS."

**Response:** Please refer to Master Response 5.

**R22-22:** The commenter states, "**1. The RDEIA Improperly Claims GHG Benefits Attributable to Other Programs.**"

The RDEIA inaccurately attributes 100 percent of the GHG emission reductions from biofuel consumption to the LCFS. This approach neglects the significant role of federal programs such as the Renewable Fuel Standard ("RFS") and the Biodiesel Blenders Tax Credit ("BTC"). CARB acknowledged in the 2018 rulemaking that these federal mandates primarily drive biofuel production. The RFS sets a total biofuel volume in the U.S., so any volumes under the RFS volume would be available regardless of the LCFS.<sup>68</sup> Because the LCFS rewards incremental improvements in a fuel pathway lifecycle GHG emissions, there may be some additional GHG reductions beyond the RFS mandate (of 20 or 50% CI reduction) attributable to the LCFS. The 2018 LCFS amendments acknowledged this and credited the LCFS only for CI reductions beyond those required by the RFS. However, the 2024 amendments assume that the LCFS is responsible for the full CI reduction in the Draft EIA, despite the RFS and BTC still being in effect, and CARB has failed to explain the change of attribution. This methodological shift fails to consider the continuing influence of federal mandates, thus significantly inflating the projected environmental benefits of the proposed amendments."

**Response:** Please refer to Master Response 5.

**R22-23:** The commenter states, "**2. The EIA Overstates GHG Benefits from the Project by Asserting the Project Will Result in Proportional Declines in Emissions from In-State Oil Production and Refining.**"

The EIA further errs by assuming that reduced fossil diesel consumption in California will result in a proportional decline in oil production and refining within the state, thereby claiming GHG reductions from reduced upstream oil production and refining as a result of the Project. CARB has not previously included upstream emission reduction benefits and the current approach and assumptions are flawed:

- **Declining California Crude Production:** California's crude oil production has been in decline well before the LCFS went into effect and is likely to continue independent of LCFS regulations. By assuming a static baseline at 2019 production levels, CARB disregards this long-term decline, leading to an inaccurate assessment of the LCFS's impact. CARB does not explain why they used a 2019 baseline when the CEQA baseline as stated on page 14 of the Draft EIA indicates a 2023 baseline year. The Oil & Gas Extraction emissions for 2019 are 18% higher than in 2023, leading to overstated emissions reductions. Use of this baseline is improper under CEQA. See CEQA Guidelines § 15125.
- **California Refining Capacity:** The EIA assumes that reduced demand for fossil diesel in California will lead to a corresponding reduction in refining capacity within the state. However, this assumption ignores the complex dynamics of the global oil market. California refineries may continue to produce fossil diesel, exporting it to regions outside the state or even internationally, where LCFS and Cap-and-Trade compliance costs do not apply. This “fuel switching” undermines the EIA’s assessment of the LCFS's impact on reducing GHG emissions and criteria pollutants within California. Based on an analysis of CEC and LCFS data, only 29% of California’s diesel remains in-State.<sup>69</sup>
- **Rebound Effect and Market Dynamics:** In its analysis, CARB assumes a one-to-one decline in oil and gas extraction to fossil diesel demand declines as estimated in the LCFS. Even assuming that fossil diesel demand may decrease as an effect of LCFS, CARB fails to account for any rebound effect, a well-documented phenomenon in energy economics where improvements in efficiency or reduced demand for a particular energy source can lead to broader market changes that offset some of the expected reductions.

Moreover, even assuming some upstream emissions reductions occur from reduced oil extraction and production as a result of the Project, CARB has overestimated those benefits in several ways. First, CARB assumes the decline in upstream emissions is proportional to the decline in demand for ULSD. CARB estimates the upstream emission reductions using the following formula:

$$\text{Upstream emission reductions} = \text{Reference Year Oil \& Gas Emissions} * \text{Percent Reduction in Diesel Demand 2024-2046}$$

Each of the inputs into the Upstream emission reductions calculation is flawed. For Reference Year Oil & Gas Emissions, CARB incorrectly uses 2019 emissions as the reference year for oil and gas extraction emissions when the Project baseline is 2023, overstating the baseline emissions.<sup>70</sup> For Percent Reduction in Diesel Demand 2024-2046, CARB incorrectly estimates the percent reduction in diesel demand. CARB calculates the percent change in ULSD demand in 2046 compared to 2024 for the Project but does not account for reduced demand that would occur under a No Project (baseline) scenario, thus overstating the reduction in diesel demand for the Project.<sup>71</sup>

CARB then inexplicably evaluates the demand reduction from gasoline and diesel, and then makes an adjustment to “remove gasoline,”<sup>72</sup> incorrectly calculating the proportion of diesel produced from a barrel of crude oil.<sup>73</sup> While this results in an (incorrect) reduction in diesel demand by 34%, CARB applies a 45% reduction in upstream emissions.<sup>74</sup> Finally, these calculations assume that lower fossil diesel demand results in proportional upstream emission reductions. However, as explained above, some diesel production is continuing but being exported. The net result is a significant overestimation of the upstream emission reductions attributable to the LCFS.”

**Response:** Please refer to Response to Comment 15.1-65.

**R22-24: The commenter states, “3. CARB’s Assumptions of the GHG Impacts from ILUC Are Not Supported by Substantial Evidence and Grossly Understate Emissions from Crop-Based Biofuels.**

Significance determinations under CEQA may not be based on speculation and unsubstantiated opinion. See *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal.4th 204, 228. As described above, the RDEIA’s analysis of ILUC impacts is premised on outdated and unsupported modelling assumptions that serve to grossly understate the Project’s impact on deforestation from increased demand for crop-based biofuels. For example, GTAP’s assumption of significantly increased productivity on existing lands to meet biofuel demand is contrary to real-world observations. The lack of evidentiary support underpinning GTAP and its corresponding assumptions of the carbon intensity of crop-based biofuels further render the RDEIA’s claim that the Project will not result in significant greenhouse gas impacts invalid under CEQA.”

**Response:** Please refer to Master Response 2.

**R22-25: The commenter states, “II. The RDEIA Fails to Adequately Disclose, Evaluate, and Mitigate Air Quality Impacts from the Use of Renewable Diesel and Biodiesel in California.**

**A. The RDEIA Improperly Claims Air Quality Benefits from Decreased Crude Oil Extraction in California.**

Similar to its flawed greenhouse gas analysis, CARB inappropriately attributes to the Project air quality benefits resulting from declining crude oil production in California. For NO<sub>x</sub>, CARB asserts in its RDEIA analysis that up to 55% of annual emissions reductions and 24% of overall emissions reductions from the Project in 2024–2046 are due to upstream decreases in emissions.<sup>75</sup> For particulate matter 2.5 (“PM<sub>2.5</sub>”), CARB claims that up to 37% of annual emissions reductions from the Project and 25% of overall reductions in 2024–2046 are due to upstream emissions declines.<sup>76</sup>

As explained above, CARB provides no evidence that the Proposed Amendments have a significant impact on upstream crude oil extraction declines in California, and data in the record



suggest that there is likely no effect. For example, according to CARB's 2022 update to the Scoping Plan, California crude production has been on the decline since 1986, even prior to the existence of the LCFS.<sup>77</sup> Further, this faulty accounting stands in sharp contrast to its approach in the 2018 LCFS rulemaking. As noted above, in that rulemaking, CARB did not assume that the LCFS had any effect on state crude oil production. CARB does not explain why it has altered its rationale here. CARB's emissions reductions estimations related to crude extraction declines thus lack evidentiary support and likely inflate the Project's air quality benefits."

**Response:** Please refer to response to Comment 15.1-65.

**R22-26:** The commenter states, "**B. By Ignoring Relevant Data in Its Own 2021 Study, CARB Fails to Properly Analyze Emissions Impacts from Use of Biodiesel and Renewable Diesel in California Vehicles.**"

CARB improperly bases its NOx and PM emissions estimates on outdated information, while ignoring the updated and relevant findings of a 2021 CARB study. This failure to consider pertinent data renders its analysis inadequate and violates CEQA.

In estimating NOx and PM emissions from the Project, CARB relies on a 2011 CARB study which shows that, when compared to fossil diesel, RD reduces PM and NOx and BD reduces PM and increases NOx.<sup>78</sup> According to CARB, the NOx reductions from use of RD serve to offset some or all of the NOx increases from BD.<sup>79</sup> Based in part on this assumption, CARB concludes that the Proposed Amendments cause a net reduction of NOx and PM.<sup>80</sup>

This conclusion lacks evidentiary support because CARB fails to account for the fact that new engines in use in California today have emissions impacts that are different from the engines studied by CARB in 2011. Since 2011, CARB has implemented regulations requiring the use of new technology diesel engines ("NTDEs").<sup>81</sup> As a result of these requirements, NTDEs are currently in widespread use in California, and CARB's data show that, by 2045, these engines will make up the vast majority of California engines.<sup>82</sup>

Critically, with respect to NOx, although CARB had assumed that NTDEs would fully address the NOx pollution from biodiesel,<sup>83</sup> a 2021 CARB study on emissions from NTDEs shows that this is not the case. To the contrary, the study shows that, when used in NTDEs, RD does not offset the increased NOx emissions from BD. This is because, in NTDEs, RD does not decrease NOx emissions (as it does in older engines) while BD continues to increase NOx emissions when compared to fossil diesel.<sup>84</sup>

Therefore, CARB's own 2021 study shows that any increases in BD use in NTDEs today could lead to NOx increases since those emissions are no longer offset by a NOx decrease from RD. Without explanation, CARB ignores this highly relevant data. Failing to account for this important evidence, CARB claims without support that BD use in NTDEs results in no change in NOx and that there are significant NOx reductions from RD and BD use,<sup>85</sup> accounting for 87% of overall NOx reductions in 2024–2046.<sup>86</sup> CARB misleads the public when it claims in the

RDEIA that it is taking a “conservative approach” by using the same assumptions that it used in 2018 to analyze BD NOx impacts.<sup>87</sup> The more recent data suggest higher emissions than CARB projects; a conservative approach would be to account for these 2021 data when estimating NOx impacts. Instead, CARB sweeps these findings under the rug.

Moreover, CARB improperly locks in stable biodiesel volumes in its modeling. In its modeling input spreadsheet, CARB indicates that biodiesel volumes are “[l]ock[ed] at 2022 volumes.”<sup>88</sup> CARB provides no explanation for why it is proper to “lock” biodiesel volumes by reading volumes into the model as fixed. CARB’s model is designed to select the least-cost fuel option based on various data.<sup>89</sup> Given the cost advantages of BD, as evident in the modeling inputs,<sup>90</sup> BD volumes would likely grow over time. This increase, based on the 2021 data, could present NOx emissions increases. Yet CARB, inexplicably, appears to have overridden the model to fix the volumes at current levels.

With respect to PM emissions, CARB also ignores the findings of the 2021 study. Although the 2021 study shows that, when used in NTDEs, neither RD nor BD reduce PM by a statistically significant amount,<sup>91</sup> CARB asserts in the Standardized Regulatory Impact Assessment (“SRIA”) for the Project that RD results in a 30% reduction in PM and BD a 95% reduction.<sup>92</sup> In the RDEIA, CARB further asserts that 55% of overall PM reductions 2024–2046 are attributable to RD and BD use.<sup>93</sup> These conclusions are belied by relevant data in the 2021 study.

In sum, by ignoring relevant data on NOx and PM emissions from the combustion of biofuels, the RDEIA lacks evidentiary support and likely underestimates the Project’s harmful emissions impacts and overstates its emissions benefits.”

**Response:** The evidence CARB used to support its air quality benefits estimates associated with the use of biomass-based diesel was appropriate. CARB’s estimates accurately accounted for the expected future California heavy duty vehicle mix, which is expected to retain a large number of legacy engines through 2046, particularly for off-road applications.

CARB staff does not expect biodiesel volumes supplied to California to increase as a result of the Proposed Amendments. Biodiesel volumes supplied to California have declined in the two most recent complete calendar years (2022 and 2023) for which LCFS reporting data is available.<sup>27</sup> During the past several years, LCFS reporting data shows that renewable diesel has accounted for nearly all of the growth in diesel alternatives. Biodiesel supply to California during that time remained relatively stable before declining. Additionally, renewable diesel sales have recently outcompeted biodiesel, despite a slightly elevated production cost. This is likely because renewable diesel is a drop-in fuel that can substitute fossil diesel without engine, storage, or fuel mix modifications whereas biodiesel has fuel mix limits (20% blend limit) and requires storage infrastructure modifications. Accordingly, it was reasonable and

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<sup>27</sup> CARB, *LCFS Data Dashboard Figure 2: Alternative Fuel Volumes and Credit Generation*.  
<https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard>

consistent with market trend evidence for staff to incorporate that trend of expected biodiesel supply stability into the fuel supply modeling scenarios supporting analysis of the amendments.

The 2021 CARB-commissioned UC Riverside Low Emission Diesel (LED) Study: Biodiesel and Renewable Diesel Emissions in Legacy and New Technology Diesel Engines (NTDEs), assessed particulate matter (PM) and oxides of nitrogen (NOx) emissions from biodiesel (BD) and renewable diesel (RD) used in legacy engines and NTDEs. With regard to particulate matter emissions, the LED study confirmed the previous finding that the use of renewable diesel and biodiesel in legacy engines reduces particulate matter emissions relative to fossil diesel. The LED study also confirmed reductions in PM in NTDEs, but, as the commenter notes, the results were not statistically significant.<sup>28</sup>

With regard to NOx, the LED study confirmed staff's previous understanding that renewable diesel *decreases* NOx in legacy engines, and BD *increases* NOx in legacy engines. For NTDEs, the study found no statistically significant difference in NOx emissions between 100% renewable diesel and fossil diesel. For fuel blends that included biodiesel, the LED study found NOx levels in NTDEs were higher than NOx levels in NTDEs fueled with ULSD/fossil diesel or 100% renewable diesel. This was a new finding that raised questions about the ability of selective catalytic reduction (SCR) emission control systems to control for NOx emissions in fuel blends with high levels of biodiesel. In all cases, the emissions results were below the emissions limits needed for engine certification. But given the results, staff believed that additional emissions testing on the emissions performance of biodiesel blends in NTDEs was warranted. Blend levels above 20% BD may not be used in California, but the LED study tested on an engine dynamometer higher blend levels of biodiesel than the 20% or below blend-level that can be legally used in California. Staff are engaging in further research using representative on-road biodiesel blends in chassis dynamometer tests to determine whether the LED study results are applicable in real-world use of these fuels.

The most significant health and air quality improvements from the use of RD and BD come from the use of these fuels, as opposed to fossil ULSD, in legacy engines, in which the PM reductions are significant and clearly supported by both the 2021 LED study and previous emissions analysis and studies. In legacy engines using ULSD, PM emission rates can be between 25-50 times higher than emission rates in NTDE engines. Similarly, in legacy engines using ULSD, the NOx emissions can similarly be between 7-17 times higher than emission rates in NTDE engines.<sup>29,30</sup> Given the much higher PM emission rates in legacy engines, when RD and BD are used in legacy engines, the RD and BD results in a much more significant total reduction of emissions and much more significant health benefits than when the same fuel is

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<sup>28</sup> See CARB, California Low Carbon Fuel Standard Workshop, April 10, 2024.

<https://ww2.arb.ca.gov/sites/default/files/2024-04/LCFS%20April%20Workshop%20Slides.pdf>

<sup>29</sup> California Air Resources Board, Low Emission Diesel (LED) Study: Biodiesel and Renewable Diesel Emissions in Legacy and New Technology Diesel Engines, November 2021.

[https://ww2.arb.ca.gov/sites/default/files/2021-12/Low\\_Emission\\_Diesel\\_Study\\_Final\\_Report\\_12-2921.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-12/Low_Emission_Diesel_Study_Final_Report_12-2921.pdf)

<sup>30</sup> California Air Resources Board, EMFAC 2021 Model. November, 2024. <https://arb.ca.gov/emfac/emissions-inventory/>.

used in NTDE engines. The majority ~~Almost all~~ of the air quality and health improvements that come from the tailpipe emissions reductions from the Proposed Amendments and subsequent increased biofuels use are a result of these additional PM reductions from increased RD and BD use in legacy engines, a conclusion that is supported by the results of the 2021 LED study.

While CARB's emissions analysis was informed by the 2021 LED study, staff did not rely on specific emission factors that might have been derived from the 2021 LED study partly because some results from the 2021 LED study were statistically significant and other results were not. While the PM emissions results of 2021 LED study were consistent with the preexisting evidence that RD and BD use reduces PM relative to ULSD, the 2021 LED Study did include novel findings that BD use in NTDE engines had higher NOx emissions than ULSD. However, as mentioned above, these emissions results were from biodiesel blends with higher biodiesel quantities than what is currently allowed by regulation in California. Additional testing of biodiesel blends in on-road NTDE use in California is underway to improve data availability on emissions rates for in-use fuels. Data on existing fuel supplies and information from fuel projections indicates that BD volumes are shrinking or staying flat, while RD use, which has consistently shown reduced PM and NOx emissions, is growing, which will result in overall health and AQ improvements from implementation of the LCFS Proposed Amendments and not impacts. CARB currently implements a Regulation on the Commercialization of Alternative Diesel Fuels (ADF regulation),<sup>31</sup> which is designed to ensure that the use of biodiesel blends do not result in excess NOx emissions relative to ULSD. Additional data on the testing of biodiesel blends may inform future amendments to the ADF regulation.

**R22-27:** The commenter states, “**C. Even Assuming There Are Any Air Quality Benefits from Biofuels Use, CARB Overstates these Benefits by Failing to Account for the Effects of Other Policy Incentives.**”

As it does with greenhouse gases (explained above in Section I.C.1), CARB improperly claims that 100 percent of RD's PM and NOx benefits should be attributed to the LCFS, thus failing to acknowledge that the federal RFS, BTC and other incentives also have an effect.<sup>94</sup> CARB provides no evidence suggesting that only the Project (and not other policy incentives) affects biofuels volumes and the associated air quality impacts. This flawed overestimation of biofuels' air quality impacts is a departure from other recently approved CARB regulations that include methodologies detailing how CARB accounted for other relevant initiatives and incentives already in place when it estimated impacts of the proposed regulation.<sup>95</sup> It is also a departure from past practice in the LCFS. In the 2018 LCFS rulemaking, for example, Staff included an adjustment to the GHG and air quality benefits to “eliminate double counting of emission reductions that are more appropriately attributed to other State and federal programs such as Advanced Clean Cars and Renewable Fuel Standard.”<sup>96</sup> Staff clearly detailed the methodology for attributing the incremental benefits of the LCFS and those to other programs in Appendix F of the 2018 LCFS ISOR.<sup>97</sup> CARB does not justify its methodology nor explain why it has

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<sup>31</sup> Title 13, Cal. Code Regs., §§ 2293 *et seq.*

strayed from its accounting practices in other programs and changed course from the 2018 LCFS rulemaking.”

**Response:** Please refer to Master Responses 4 and 5.

**R22-28: The commenter states, “D. CARB Fails to Provide Adequate Mitigation for Air Quality Impacts from Biofuels Combustion.”**

Because the RDEIA fails to adequately assess the air quality emissions impacts of the Project, overstating its benefits and ignoring data on emissions, its mitigation is insufficient. When air quality impacts are significant, as the RDEIA acknowledges they are here,<sup>98</sup> all feasible mitigation is required under CEQA. Public Res. Code § 21002; *Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011, 1027; *POET, LLC*, 218 Cal.App.4th at 734-35. Mitigation can take many forms, including avoiding the impact altogether by not taking a certain action or parts of an action and minimizing impacts by limiting the degree or magnitude of the action and its implementation. 14 Cal. Code Regs., § 15370. As explained above, mitigation measures are only legally valid if they are fully enforceable. Public Res. Code § 21081.6(b); *Assn. of Irrigated Residents v. Kern County Bd of Supervisors* (2017) 17 Cal.App.5th 708, 752.

CARB has failed to fulfill these mitigation requirements with respect to air quality impacts from the Project’s support for biofuels combustion. For example, members of the public have proposed to CARB a wide range of options during this rulemaking including, among others, (1) A credit multiplier for zero-emissions transit vehicles that reflects their impact on vehicle-miles traveled and (2) enhanced credit-generation potential for medium- and heavy-duty charging infrastructure. Such measures are feasible and would increase deployment of zero-emissions technology and thus yield NOx and PM emissions reductions needed to mitigate emissions from the impacts from the Project’s RD and BD use in California vehicles. CARB’s failure to require all feasible mitigation impacts violates CEQA.<sup>99</sup>

**Response:** Please refer to Master Response 4, R22-18, 299-16, and 299-18 regarding mitigation measure requirements under CEQA and the feasibility standard. Commenter suggests two general measures as potential mitigation measures for the Proposed Amendments. Suggested measure (1) describes a credit multiplier, but does not provide an explanation of what that multiplier would be. Suggested measure (2) describes enhanced credit-generation potential for medium- and heavy-duty charging infrastructure, but does not explain what “enhanced” means. CARB cannot speculate the commenter’s intention and is therefore limited in its ability to respond.

For mitigation measures to be implementable under CEQA, they must be feasible. “Feasibility’ under CEQA encompasses a range of considerations, including ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.” (*California Natural Gas Vehicle Coalition v. State Air Resources Board* (2024) 105 Cal.App.5th 304, citing *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17.) Courts have recognized that policy considerations

are relevant to the feasibility analysis, and that disagreements over legitimate policy determinations are not a basis for setting aside an EIR's determinations. (*Id.* at 20; *San Diego Citizen Group*, supra, at 17.) CEQA does not require the discussion and incorporation of mitigation measures that would defeat the policy objectives identified in the CEQA document. (*California Natural Gas Vehicle Coalition v. State Air Resources Board* (2024) 105 Cal.App.5th 304.)

A credit multiplier for zero-emission transit vehicles or medium- and heavy-duty charging infrastructure as a mitigation measure is not feasible because neither would provide assurance that additional ZEVs would be deployed, and accordingly it is unclear if either would result in any emissions benefits.

**R22-29: The commenter states, “III. The RDEIA Fails to Adequately Disclose, Analyze and Mitigate Impacts of Electrolytic Hydrogen Production.**

**A. The RDEIA Fails to Adequately Describe the Project with Respect to Electrolytic Hydrogen.**

The Proposed Amendments allow for the environmental attributes of low-CI electricity to be separated from its physical generation, creating a potential mismatch between the power sourced for electrolytic hydrogen production and the actual grid mix, which could include fossil fuels. The RDEIA fails to describe this feature of the Project and the fact that it is allowing three-quarters time matching for low-CI electricity. “An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR.” *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 730 (quoting *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193). An accurate project description is “the heart of the EIR process” and “necessary for an intelligent evaluation of the potential environmental effects of a proposed activity.” *Sacramento Old City Ass’n. v. City Council* (1991) 229 Cal.App.3d 1011, 1023; *San Joaquin Raptor/Wildlife Rescue Center*, 27 Cal.App.4th at 730. While extensive detail is not necessary, the law requires that EIRs describe proposed projects with sufficient detail and accuracy to permit informed decisionmaking. See CEQA Guidelines § 15124 (project description). To adequately evaluate the environmental ramifications of the Project, the RDEIA must first provide a comprehensive description of the project itself. CARB’s failure to describe in the RDEIA relevant information about the Project’s electrolytic hydrogen requirements violates this duty.”

**Response:** Please refer to Response to Comment R17-3 with regard to treatment of renewable hydrogen and fossil hydrogen under the Proposed Amendments. The EIA project description discloses information about hydrogen production and reasonably foreseeable compliance responses in response to the Proposed Amendments. Please also refer to Response to Comment R22-37 with regard to book and claim electricity for hydrogen production, as the commenter makes similar points about direct air capture.

**R22-30: The commenter states, “B. CARB Fails to Address Potential Greenhouse Gas Emissions Increases from Electrolytic Hydrogen Production.**

Scientific evidence shows that indirect accounting for low-CI electricity that allows matching of low CI energy generation with a facility’s energy demand on anything less frequent than an hourly basis would lead to emissions increases that are just as dramatic as relying on grid-average electricity.<sup>100</sup> CARB fails to account for this impact. According to research from Princeton University, an hourly matching requirement is necessary to avoid spiking pollution on the power grid from electrolytic hydrogen production. Indeed, even a weekly matching standard would lead to emissions increases.<sup>101</sup>

Despite this evidence, the Project allows book-and-claim matching for low-CI electricity to span three quarters.<sup>102</sup> This change represents a step backwards from the already-deficient ISOR proposal, which required only quarterly, rather than hourly, matching. CARB fails to justify the basis for this step backward, and the RDEIA does not address the possibility that LCFS hydrogen could increase greenhouse gas emissions under this accounting framework, directly counter to the very purpose of the LCFS program. Given the evidence that anything less than hourly matching can have adverse impacts, these effects of the Project are not too speculative as to excuse CARB from the obligation to undertake such an analysis.”

**Response:** Please refer to Response to Comment R22-29.

**R22-31: The commenter states, “C. CARB Fails to Evaluate and Mitigate Impacts to the Electric Grid.**

In addition to omitting any examination of emissions impacts, the RDEIA fails to analyze the extent to which the Project’s lax standards for hydrogen production, including a weakening of time-matching requirements in the 15-day change proposal will impact, grid reliability. Impacts to utilities and service systems must be evaluated under CEQA. CEQA Guidelines §§ 15126.2(b), 15301(b); Guidelines, Appendix G, Environmental Checklist Form, § XIX. Research has found that failing to adhere to hourly-matching and other requirements for hydrogen production would increase power prices in Southern California by 8%.<sup>103</sup> Other studies examining hourly versus annual matching (which the Proposed Amendments approach) have found annual matching would result in up to a 43% increase to power prices.<sup>104</sup> The RDEIA fails to disclose, analyze, and mitigate these effects.

Minimizing the environmental and grid impacts of electrolytic hydrogen production requires ensuring compliance with each of the following: 1) hourly matching, 2) ensuring additional renewable resources are deployed to meet demand; and 3) delivery of the electricity used to power the production process.<sup>105</sup> Yet rather than adopt each of these provisions, CARB has proposed to further weaken time-matching requirements in 15-day language. CARB’s failure to incorporate each of these measures into the Project violates CEQA. Pub. Res. Code § 21002.1(b); CEQA Guidelines § 15126.4.”

**Response:** Please refer to response to comment R17-3 with regard to treatment of renewable hydrogen and fossil hydrogen under the Proposed Amendments, as well as Response to Comment R22-29. As explained in the EIA, the impacts of the Proposed Amendments were analyzed in accordance with the topics presented in the Environmental Checklist in Appendix G to the CEQA Guidelines. (tit. 14, Cal Code Regs., sec. 15000 *et seq.*) However, CEQA does not require energy use forecasting, and grid reliability is not an environmental impact required to be analyzed under Appendix G. In addition, changes in power prices are an economic impact, and the EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments potentially significant physical impacts on the environment. As such, comments related to economic or financial concerns are outside the scope of the EIA.

**R22-32:** The commenter states, “**IV. The RDEIA Fails to Accurately Describe the Project’s Fossil Hydrogen Provisions and Fails to Adequately Analyze and Mitigate Their Impacts.**

**A. The RDEIA Fails to Describe the Project with Respect to Its Crediting of Fossil Methane-Derived Hydrogen.**

As with electrolytic hydrogen, the RDEIA fails to properly describe the Project with respect to hydrogen production from fossil methane. The RDEIA contains a section titled “Remove Eligibility of Fossil Fuel-Derived Hydrogen” which explains that the Proposed Amendments will “remove credit generation eligibility for hydrogen produced from fossil fuels, effective January 1, 2031.”<sup>106</sup> But this description omits a key provision within the Proposed Amendments that will allow fossil methane to flourish under the Proposed Amendments: the allowance of fossil methane to generate credits so long as producers purchase book-and-claim biomethane credits and pair those credits with fossil hydrogen.<sup>107</sup> This loophole within the fossil methane phase out provision is highly consequential to the Project and its environmental impacts. Evidence shows that fossil hydrogen production emits a wide range of pollutants, including GHGs and health-harming criteria pollutants like NO<sub>x</sub>, PM, carbon monoxide (“CO”) and volatile organic compounds (“VOCs”), as described in more detail below in Section V. The purchase of biomethane credits does nothing to alter the air quality impacts from fossil hydrogen production in California, as data show that those credits are from out-of-state biomethane sources that do not provide any air quality benefit to California.<sup>108</sup> Their greenhouse gas reduction benefits are also dubious as detailed below.

An accurate project description is “the heart of the EIR process” and “necessary for an intelligent evaluation of the potential environmental effects of a proposed activity.” *Sacramento Old City Ass’n. v. City Council* (1991) 229 Cal.App.3d 1011, 1023. CARB’s failure to accurately describe the Proposed Amendment’s treatment of fossil hydrogen thus violates CEQA.”

**Response:** Please refer to Response to Comment R17-3.



**R22-33: The commenter states, “B. The RDEIA Does Not Properly Analyze and Mitigate the Greenhouse Gas Emissions of Fossil-Derived Hydrogen Paired with Book-and-Claim Biomethane Credits.**

The RDEIA fails to adequately analyze the GHG emissions of hydrogen production from fossil methane paired with book-and-claim biomethane credits. Hydrogen produced from fossil methane via steam methane reformation emits GHGs,<sup>109</sup> and the Project assumes that this positive CI can be effectively masked by biomethane credits that have a negative CI.

Evidence shows that such an assumption is incorrect in many instances, as the greenhouse gas benefits of book-and-claim biomethane credits derived from dairies and other sources of biomethane are illusory. For example, recent CARB data call into question the effectiveness of dairy digesters—whose sole purpose is to prevent methane from venting into the atmosphere—in ensuring methane capture. Data show that some farms equipped with digesters are, in fact, venting methane and even considered “mega-emitting” facilities.<sup>110</sup> Also, some digesters that generate negative CI scores in LCFS were constructed before the LCFS even existed, meaning that their greenhouse gas emissions reductions are not additional to what would have occurred without the LCFS.<sup>111</sup> Further, since there is no centralized system for tracking book-and-claim biomethane credits, the risk of double counting of emissions reductions is high; a credit purchased and paired with fossil methane-derived hydrogen in the LCFS may have already been claimed by another entity as a GHG reduction.

Earthjustice and other parties presented these concerns to CARB, but the RDEIA ignores this evidence and incorrectly assumes that book-and-claim biomethane credits reduce greenhouse gases and are appropriately assigned a negative CI score. CARB’s failure to analyze the greenhouse gas emissions of fossil hydrogen paired with book-and-claim biomethane credits violates CEQA.”

**Response:** Please refer to Response to Comment R17-3.

**R22-34: The commenter states, “C. CARB’s Failure to Properly Evaluate Greenhouse Gas Impacts of Fossil Hydrogen in the RDEIA Also Renders Its Mitigation Inadequate.**

Because CARB has not sufficiently accounted for the greenhouse gas impacts of fossil hydrogen paired with booked-and-claimed biomethane credits, its mitigation of these potentially significant effects is also inadequate. Numerous parties commenting in this rulemaking have called on CARB to avoid the pitfalls associated with book-and-claim biomethane crediting. CARB failed to adopt feasible mitigation measures that these parties suggested, including the phase-out of avoided methane crediting that assigns negative CI scores to certain biomethane producers and requiring that the biomethane be delivered to California, consistent with the requirements for all other LCFS fuels and with the methods used by all other California programs that use biomethane.<sup>112</sup> CARB’s failure to adopt these feasible mitigation measures violates CEQA. Public. Res. Code § 21002.”

**Response:** Please refer to Response to Comment R17-3.

**R22-35:** The commenter states, “**V. The RDEIA Fails to Adequately Disclose, Analyze, and Mitigate Emissions and Related Health Impacts of Air Pollutants that Will Be Emitted as a Result of the Project.**

CARB acknowledges that the Project’s long-term operations could result in significant and unavoidable impacts to air quality.<sup>113</sup> However, CARB fails to sufficiently analyze these impacts because it fails to provide sufficient information about the magnitude, severity and health consequences of a wide range of emissions and because its assumptions are outdated. *County of Fresno*, 6 Cal. 5th at 522 (“There must be a reasonable effort to put into a meaningful context the conclusion that the air quality impacts will be significant.”); *Cleveland Nat’l Forest Foundation v. San Diego Assn. of Governments* (2017) 3 Cal.5th 497, 514 (“an EIR’s designation of a particular adverse environmental effect as ‘significant’ does not excuse the EIR’s failure to reasonably describe the nature and magnitude of the adverse effect”); *Berkeley Keep Jets Over the Bay Com. v. Board of Port Cmrs.* (2001) 91 Cal.App.4th 1344, 1371 (“simply labeling the effect ‘significant’ without accompanying analysis of the project’s impacts ... is inadequate to meet the environmental assessment requirements of CEQA”).

**Response:** Please refer to response to comment R22-36.

**R22-36:** The commenter states, “**A. The RDEIA Fails to Analyze Emissions of Numerous Health-Harming Pollutants.**

In the RDEIA, CARB limits its analysis to PM and NOx emissions.<sup>114</sup> Yet evidence shows that many other types of air pollutants caused by the Project could have impacts. To take just one example, facilities that manufacture hydrogen from methane using steam-methane reformation—which CARB admits are likely to increase as a result of the Project<sup>115</sup>—emit not only PM and NOx but also other pollutants harmful to human health, including carbon monoxide and volatile organic compounds.<sup>116</sup> CARB entirely fails to account for these emissions. This omission violates CEQA. *See, e.g., Sierra Watch v. County of Placer* (2021) 69 Cal.App.5th 86, 98–99 (finding EIR inadequate because it failed to evaluate a category of pollutants that would result in environmental impacts due to increased vehicle miles traveled (“VMT”) resulting from the Project).

**B. CARB’s Failure to Update Its Health Impact Analysis Is in Error.**

The RDEIA improperly bases its analysis of health impacts on the evaluation conducted in 2023 in connection with the SRIA<sup>117</sup> despite the fact that the Proposed Amendments differ significantly from the SRIA in ways that could affect emissions and their health impacts. For example, the Proposed Amendments extend crediting periods for certain biomethane pathways for many years beyond the time period contemplated in the SRIA.<sup>118</sup> As detailed by LCJA, the LCFS’s crediting of large dairy operations has a wide range of air quality and health impacts.<sup>119</sup> It follows that the Project’s extension of the timelines for these credits increase health impacts, rendering the SRIA’s health assessment outdated and inadequate.<sup>120</sup>

CARB's failure to update the Health Impact Analysis and accurately describe the health impacts of the Project based on the Project's specific parameters violates CEQA. See *County of Fresno*, 6 Cal. 5th at 518 ("When reviewing whether a discussion is sufficient to satisfy CEQA, a court must be satisfied that the EIR... makes a reasonable effort to substantively connect a project's air quality impacts to likely health consequences.").

**Response:** Please refer to Master Response 4. CARB conducted and disclosed extensive emissions and health analyses for the Proposed Amendments, as part of the Standardized Regulatory Impact Analysis (SRIA), the Initial Statement of Reasons (ISOR), and in the Recirculated EIA (Chapter 3.0).

In the Recirculated EIA, CARB takes a programmatic approach in assessing the types of adverse environmental effects that could occur in accordance with Appendix G of the CEQA Guidelines, as appropriate for a statewide programmatic regulatory action like the Proposed Amendments. "The degree of specificity required in an [EA] will correspond to the degree of specificity involved in the underlying activity that is described in the [EA]." (Guidelines, § 15146.) The long term air analysis not only analyzes PM and NOx, but also discloses impacts from criteria pollutants and toxics as a result of implementing the compliance responses to the Proposed Amendments. See Master Response 4 regarding the air impact analysis analyzed in the EIA.

In regards to emissions from local hydrogen projects, the EIA discloses that the reasonably foreseeable compliance responses associated with the Proposed Amendments may include construction and operations of new facilities related to hydrogen production; however, attempting to predict decisions by entities regarding the specific location and design of infrastructure, source and production of materials, and other activities undertaken in response to implementation of the Proposed Amendments would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, this Draft EIA generally does not analyze site-specific impacts when the location of future facilities or other infrastructure changes are speculative. CARB's analysis disclosed impacts of potential production facilities to the extent reasonably foreseeable at this time. CARB's general level of analysis of the potential compliance responses to the Proposed Amendments was appropriate given the broad scope of the program.

Notably, the fundamental purpose of the Proposed Amendments is to further the State's goals in reducing emissions – unlike in the case of the extensive development project that was the basis of the *County of Fresno* decision cited by the commenter. While the LCFS Regulation's primary goal is to reduce GHG emissions associated with transportation fuel used in California, the Proposed Amendments would also result in a notable decrease in emissions of oxides of nitrogen (NOx) and fine particulate matter (PM<sub>2.5</sub>) as discussed on pages 40 through 57 of the Recirculated Draft EIA.

The Proposed Amendments provide significant reductions in PM<sub>2.5</sub>. The Health Analysis in the SRIA explains the reductions in PM<sub>2.5</sub> would lead to the decrease in acute respiratory, cardiovascular, and asthma related hospital and emergency room visits. The EIA provided that

these reductions in adverse health cases would be seen across all ages in the State and could particularly benefit children due to reduced cases of asthma onset and symptoms. The emissions reductions have consistently shown the Proposed Amendments will lead to reductions, supporting the conclusions that the health improvements identified in the SRIA Health Impact Analysis are still accurate.

**R22-37: The commenter states, “V. The RDEIA Fails to Adequately Disclose, Analyze and Mitigate Impacts from Reliance on Direct Air Capture.”**

The EIA fails to adequately disclose, analyze, and mitigate the potential impacts stemming from the reliance on DAC technology. While the EIA acknowledges that DAC projects will involve substantial infrastructure development, including CO<sub>2</sub> pipelines, transportation, and energy demands, it does not adequately examine how these projects will be powered or the associated environmental effects.

CARB’s assumption that DAC will be powered by zero-carbon electricity is speculative and unsupported by the analysis presented. As with electrolytic hydrogen, the Proposed Amendments include a “book-and-claim” accounting method for low-CI electricity used in DAC projects that allows for the environmental attributes of low-CI electricity to be separated from its physical generation. Such accounting creates a potential mismatch between the power sourced for DAC and the actual grid mix, which could include fossil fuels, and CARB allows for temporal matching over three quarters rather than hourly. As explained above in Section III, hourly matching is required to avoid greenhouse gas emissions increases. Thus, electricity used to power DAC in the Project could result in higher actual greenhouse gas emissions than projected in the RDEIA, and utility and system impacts that the RDEIA does not address.

The RDEIA’s treatment of DAC is also counter to the 2022 Scoping Plan update, which indicates that DAC is intended to mitigate residual or legacy emissions, not to offset emissions that can otherwise be reduced through other means.<sup>121</sup> As modeled in the ISOR proposed scenario and the 15-day change proposed scenario, fossil fuel use increases at the same time DAC enters the program, despite a decline in diesel fuel demand, suggesting that DAC is used as an offset to fossil fuel use, rather than addressing emissions that cannot otherwise be mitigated. Indeed, CARB states in the ISOR that “[a]fter 2040, the CATS model predicts the costs for DAC will be lower than the costs of obtaining credits directly from low-CI fuel producers. As a result, the latter years of the assessment are characterized by high production costs for high-CI fuel producers, but less benefits overall for low-CI fuel producers.”<sup>122</sup> The Proposed Amendments and RDEIA do not alter this ISOR conclusion.

Despite this offsetting outcome, CARB fails to analyze DAC’s effects in the RDEIA. Under the proposed scenario modeling as part of the 15-day change proposal, DAC credits account for nearly 14 million MTCO<sub>2</sub>e. That is more credits than were issued during the first four and a half years of the LCFS program.<sup>123</sup> Yet CARB fails to account for the fact that such crediting runs counter to the intent of the regulation to decarbonize the California transportation sector and that by allowing DAC to offset fossil fuel use, CARB is sacrificing needed local air quality emission reductions. Further, for any DAC projects located outside of California, the emissions

reductions would not be captured in the State's GHG emissions inventory, making it more difficult to meet any climate goals and thus increasing the significant effects of the proposed project.

Finally, because CARB failed to adequately analyze the impacts of DAC, it also failed to propose necessary mitigation such as limits on the use of DAC in the LCFS program."

**Response:** For purposes of estimating the cost of DACCS and maintaining consistency with the carbon neutrality targets, staff used the same assumptions as in the 2022 Scoping Plan<sup>32</sup> that solar generation would be used to provide the required energy for DACCS. Approximately 1 GW of solar capacity is required to meet the energy demand associated with each MMT of CO<sub>2</sub> removal, assuming a solar generation capacity factor of 30 percent. The DAC cost assumption used in the CATS model for 2045 is \$236/tCO<sub>2</sub> for liquid solvent approaches. The cost assumption for 2022-2030 is taken to be the upper bound of costs in the 2022 Scoping Plan at \$1,000/tCO<sub>2</sub>. Staff used the 2022 Scoping Plan cost estimates whereby DAC costs were interpolated between these 2030 and 2045 values. The proposed amendments created new flexibility to use book-and-claim accounting of low-CI electricity to power DACCS projects, which was not previously an option in the existing regulation. This proposal is designed to unlock further development of DACCS projects and to help ensure that zero CI electricity is procured for DACCS energy use. Staff does not know where these DACCS projects will be constructed, especially given the timeframe in which they were modeled to come online. As such, it would be speculative to use a particular grid emission factor for a particular region to compare to zero-CI power matched through book-and-claim accounting. Additionally, the abrupt increase in diesel volumes shown in the proposed scenario in the 2040s is a result of optimization modeling, and is unlikely to occur due to real-world conditions on the ground that the CATS model cannot account for (e.g. technology advancement for new/innovative transportation fuels, future cost reductions for fuels and infrastructure not included in CATS, significant investments in biofuels by 2040, multi-year supply contracts, and a general "stickiness" in ability to ramp up CARB diesel supply that can meet California specifications without requiring further investments).

Even so, staff accounted for the air quality impacts of the diesel volumes shown in the CATS model outputs for the proposed scenario and disclosed significant and potentially unavoidable air and water quality impacts from the implementation of the Proposed Amendments to the extent reasonably foreseeable and not speculative. CARB conducted a programmatic analysis consistent with its Certified Regulatory Program and analyzed resource impacts consistent with CEQA Guidelines Appendix G. The EIA chapter 2.0 disclosed DAC projects were a reasonably foreseeable compliance response and analyzed its impacts in each resource area. The specific impacts of future DAC projects is speculative without additional information such as scale, project type, location, and other essential information for analyzing impacts. The EIA takes a conservative approach in its findings of significance to recognize projects may have a

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<sup>32</sup> CARB, *Appendix H: AB 32 GHG Inventory Sector Modeling*, 2022.  
<https://ww2.arb.ca.gov/sites/default/files/2024-01/nc-2022-sp-appendix-h-ab-32-ghg-inventory-sector-modeling.pdf>

significant impact should entities with lead agency or enforcement authority not adopt mitigation measures necessary to reduce an implementing project's impacts to less than significant. Lastly, emissions accounting under the California GHG Inventory for DACCS projects is outside of the scope of this rulemaking. Please refer to response to comment 299-16 and 299-18 regarding mitigation measures.

**R22-38: The commenter states, “VI. The RDEIA Fails to Adequately Analyze Alternatives.**

The RDEIA's analysis of alternatives falls short. Under CEQA, a proper analysis of alternatives is essential to comply with the Act's mandate that significant environmental impacts be avoided or substantially lessened where feasible. Pub. Res. Code § 21002; CEQA Guidelines §§ 15002(a)(3), 15021(a)(2), 15126(d); *Citizens for Quality Growth v. City of Mount Shasta* (1988) 198 Cal.App.3d 433, 443–45. Indeed, the analysis of alternatives lies at the “core of an EIR.” *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564. As stated in Laurel Heights Improvement Association, “[w]ithout meaningful analysis of alternatives in the DEIR, neither the courts nor the public can fulfill their proper roles in the CEQA process . . . . [Courts will not] countenance a result that would require blind trust by the public, especially in light of CEQA's fundamental goal that the public be fully informed as to the consequences of action by their public officials.” 47 Cal.3d at 404. Properly developing, evaluating, and comparing project alternatives is thus key to the environmental review process. However, the RDEIA suffers from an inadequate analysis of the Project alternatives as discussed below.

**A. CARB's Use of a Model that is Incapable of Forecasting Increased Deployment of Zero-Emission Vehicles Irrespective of Credit Prices or Subsidies Fundamentally Compromises the Integrity of the Alternatives Analysis.**

CARB developed the California Transportation Supply (“CATS”) model “to support evaluation of the California fuel market and to assess the economic feasibility of potential updates to the program.”<sup>124</sup> Staff first described and published information on the CATS model in November 2022<sup>125</sup> and updated the model in February 2023.<sup>126</sup> The CATS model is an optimization model that selects the lowest-cost approach for compliance with annual fuel demand and CI goals, based on supply and cost assumptions. The model outputs the volume of feedstock-fuel volumes, credit and deficits generated, LCFS credit prices, and GHG emission estimates.<sup>127</sup> CARB uses the model to assess the outcomes of the Project and alternatives, including GHG and air quality benefits.<sup>128</sup>

While CATS can simulate market responses for fuels like RD, CARB incorporated static energy demands into the model when assessing ZEV deployment. In other words, the CATS model CARB uses to assess Project alternatives does not allow for increased deployment of ZEVs irrespective of credit prices or subsidies. This leads CARB to simplistically conclude fossil fuel use would increase when, in fact, EV deployment could increase to compensate for reduced use of biofuels. For instance, were CARB to cap biofuels, CATS is unable to select additional electric vehicle use as an alternative. CARB has not explained why ZEV deployment is restricted to predetermined numbers, nor has it justified this arbitrary ZEV cap, which

prevents the model from considering alternatives where ZEVs could compensate for policies that limit credit generation from other, harmful, fuels.

In locking-in electricity use when modelling the feasibility of alternatives,<sup>129</sup> CARB failed to credibly assess alternatives to achieve emissions reductions through expanded ZEV use. CARB's modelling failure renders the EIA's alternatives analysis wholly deficient. Understanding how alternatives would provide ZEVs a greater share of LCFS funds and incentivize their deployment is critical to any legitimate evaluation of Project alternatives. This renders the model's predictions inaccurate and invalid for CEQA purposes.

Indeed, CARB developed the CATS model with the knowledge that EVs would be a critical component of the regulation, yet the scenario fails to account for the billions of dollars expected to be generated through LCFS—funds that would logically have a substantial impact on EV penetration. The LCFS requires electricity credits to be used to further EV transportation.<sup>130</sup> It is inconceivable that CARB could suggest that such significant funding would have no effect on ZEV adoption. As evidenced by recent data, ZEV sales in California remain strong and are outpacing mandated goals, further underscoring the potential impact of increased funding on ZEV penetration.<sup>131</sup>

CARB's analysis further prejudices electrification-focused alternatives because CARB neither evaluates nor incorporates its own funding mechanism into the model as described above, nor other subsidies and incentives related to ZEV deployment.<sup>132</sup> Yet, CARB includes subsidies, including the RFS, which benefits biodiesel, renewable diesel, ethanol, SAF, and dairy CNG; and Inflation Reduction Act tax credits, which benefit SAF, DAC, ethanol with carbon capture and storage, and hydrogen including that made from dairy gas.<sup>133</sup> Including subsidies effectively lowers the cost of producing the fuels or deploying the technology. As CATS is a least-cost model, subsidies affect which fuels are most cost-effective to produce. For example, CATS includes a DAC subsidy of \$130 per metric ton of CO<sub>2</sub> captured for enhanced oil recovery projects.<sup>134</sup> However, no analysis or discussion occurred regarding the additional potential ZEVs that could be supported through the proposed Clean Fuels Reward to provide rebates for transitioning unregulated trucks to ZEV nor for holdback funds that could also provide vehicle and infrastructure rebates. It is inexplicable how CARB can omit a major funding opportunity from its own program; and CARB provides no justification in the EIA. This omission contradicts basic economic principles that when subsidies lower ZEV costs, adoption should increase. It is a fundamental flaw in the model and any conclusions resulting from the model.

Accordingly, because the model CARB used to assess alternatives does not assess how limits to biofuels can benefit increased deployment of ZEVs, CARB's alternatives analysis is fatally compromised. For example, in rejecting an alternative that would limit crediting opportunities for problematic fuels such as the avoided methane credits the program currently awards to biomethane generated from manure lagoons in factory farms, CARB claims that "[t]he loss of some of the crediting opportunities for low-CI fuel would make it difficult to meet the proposed" CI targets.<sup>135</sup> This conclusory assertion lacks credibility and precludes informed decision-making because CARB's underlying analysis does not assess how limited credits for

problematic fuels under this alternative could increase opportunities for electric vehicle deployment.”

**Response:** Please refer to response to R16-8.

**R22-39: The commenter states, “B. CARB’s Rejection of Alternative 2’s Elimination of Credit Generation from Direct Air Capture Lacks an Evidentiary Basis.**

The DEIA purports to assess Alternative 2, which would phase out avoided methane crediting in 2025, apply deliverability requirements to biomethane and biomethane produced hydrogen, and eliminate credit generation from DAC.<sup>136</sup> In addition to CARB’s failure to assess how these changes could result in increases in ZEV deployment, CARB rejects this alternative on the ground that “[e]liminating credits for DAC projects ... jeopardizes the feasibility of achieving California’s long-term decarbonization targets and the 2045 carbon intensity target proposed under this project.”<sup>137</sup> However, CARB has not actually evaluated this stated alternative. CARB claims that the exclusion of DAC would make it challenging to achieve the proposed 90% CI reduction by 2045, stating: “compliance with the regulation is difficult without direct air capture, so this scenario risks creating demand for credits that exceeds available supply beyond 2030.”<sup>138</sup> Yet this assertion is not adequately supported by the modeling provided, and the conclusions are misleading.

Per CARB’s modeling of the 15-day change Proposed Scenario released on August 12, 2024, DAC credits are introduced into the program only after 2040.<sup>139</sup> The LCFS currently allows 10 million advanced credits in the program, which could be adjusted to accommodate the potential for additional credits needed.<sup>140</sup> CARB thus fails to consider how advance crediting can offset any losses from purported reductions from DAC. Additionally, the modeling for Alternative 2 still includes 49 million metric tons of DAC credits between 2041-2045, rendering conclusions from the analysis incomplete.<sup>141</sup> Moreover, the LCFS program has been adjusted multiple times to account for changing conditions, such as unexpectedly high RD volumes, and changing regulations, such as Advanced Clean Cars II. Given the uncertainties in what technologies will prove more cost-effective and what additional regulations may be in place between now and 2040, the potential for DAC in 2040 is not a basis to reject an environmental justice-focused alternative.”

**Response:** Please refer to response to R16-8. The modeling for the EIA Alternative 2 is different than the modeling for the Initial Statement of Reasons (ISOR) Alternative 2, which the commenter alluded to. Government Code section 11346.2, subdivision (b)(4) requires CARB to consider and evaluate reasonable alternatives to the proposed regulatory action and provide reasons for rejecting those alternatives. The ISOR addresses regulatory alternatives required by Government Code section 11346.2 and provides why those alternatives were not found to be less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing law. The ISOR Alternative 2 description proposes making more stringent CI reduction targets from 2025 to 2030, then smaller increments until reaching 90% reduction in 2045, as compared to the proposed amendments. It also proposes notable differences from the EIA Alternative 2, such as not



phasing out crediting for biomethane pathways that break ground after 2030. Removing credit generation from DAC is not part of this alternative, and as such, the modeling results are not comparable. For a description of ISOR Alternative 2, please refer to the ISOR on pages 103 to 115.

The EIA, by contrast, evaluates a range of alternatives to the Proposed Amendments that could reduce or eliminate significant effects on the environment, while still meeting basic project objectives (14 CCR § 15126.6[a]). Alternative 2 in the EIA evaluated a phase out of avoided methane crediting in 2025, application of deliverability requirements to biomethane and biomethane produced hydrogen, and elimination of credit generation from DAC. As a result of limiting these credit sources, Alternative 2 of the EIA shows a demand for a bank drawdown of 129 million credits by 2046 – 5 times more credits than are available in the bank as of Q1 2024 – and significantly more than could be extended through advanced crediting since this crediting would have to be repaid within a five year time period. In addition, as explained in the EIA, DAC is a key component of CARB’s 2022 Scoping Plan to reduce greenhouse gas emissions and meet carbon neutrality by 2045, and removing credits for DAC projects would jeopardize the feasibility of achieving decarbonization targets.

**R22-40:** The commenter states, “**C. CARB Fails to Describe a Reasonable Range of Alternatives**”

CEQA requires CARB to describe a range of “reasonable alternatives to the project,” which would “attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effect of the project,” and evaluate the “comparative merits” of the alternatives. 14 Cal. Code. Regs. § 15126.6. This discussion is “the core” of CEQA *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564. The RDEIA’s alternatives analysis fails to meet that requirement here.

As an initial matter, the RDEIA’s failure to disclose the extent and severity of the Project’s widespread impacts necessarily distorts CARB’s analysis of Project alternatives. As a result, the alternatives are evaluated against an inaccurate representation of the Project’s impacts and the model’s inability to model how Project changes could accelerate electric vehicle deployment precludes an informed assessment of alternative benefits. Moreover, the DEIA’s alternatives analysis (unaltered in the RDEIA) presents a series of false choices that rests on the assumption that the only method by which the State can achieve its methane emissions reduction goals is through the LCFS’s indirect, incentive-based regulation. Each alternative scenario is simply a version of the LCFS with different requirements than the Proposed Amendments. The DEIA fails to analyze a scenario where CARB uses its regulatory authority to directly control emission sources such as methane produced by factory farms.

Finally, the EIA fails to evaluate a scenario designed to direct a significant majority of LCFS revenue to ZEVs and public transit. The exclusion of this alternative is particularly problematic given that it directly aligns with California’s goals to transition to 100 percent zero-emission vehicles<sup>142</sup> and the fact that in 2022, roughly 80% of LCFS’s \$3-4 billion in annual revenues went to combustion fuels like RD and BD rather than ZEVs.<sup>143</sup> Neither the DEIA nor the RDEIA

alternatives analyses evaluates a scenario where the growth of ZEVs is accelerated, despite the fact that such a scenario could feasibly attain the objective of significant CI reductions, significantly improving air quality, and mitigating the need for non-transportation-related technologies like DAC. This alternative could be achieved through a combination of measures including effective restrictions on crop-based biofuels, such as a cap on volumes, which the alternatives analysis does not evaluate. Furthermore, the omission of a ZEV-focused alternative disregards the potential for increased electrification to serve as a substantial mitigation measure for the proposed Project's significant impacts. This failure to analyze a reasonable ZEV-focused alternative results in an incomplete and legally deficient EIA under CEQA.<sup>144</sup>

**Response:** Please refer to response to comment R16-8.

**R22-41: The commenter states, "VII. A Revised EIA Must Be Recirculated for Public Review and Comment."**

Because of the inadequacies discussed above, the RDEIA cannot form the basis of a final EIA. CEQA requires lead agencies to prepare and recirculate a supplemental draft "[w]hen significant new information is added to an environmental impact report" after public review and comment on the earlier draft. Pub. Res. Code § 21092.1. The opportunity for meaningful public review of significant new information is essential "to test, assess, and evaluate the data and make an informed judgment as to the validity of the conclusions to be drawn therefrom." *Sutter Sensible Planning, Inc. v. Sutter County Board of Supervisors* (1981) 122 Cal.App.3d 813, 822; see also *City of San Jose v. Great Oaks Water Co.* (1987) 192 Cal.App.3d 1005, 1017. An agency cannot simply release a draft report "that hedges on important environmental issues while deferring a more detailed analysis to the final [EIR] that is insulated from public review." *Mountain Lion Coalition v. California Fish and Game Comm'n* (1989) 214 Cal.App.3d 043, 1052.

To cure the flaws in the RDEIA identified in this letter, CARB must obtain substantial new information to adequately assess the proposed Project's environmental impacts, and to identify effective mitigation and alternatives capable of alleviating the Project's significant impacts. This new information will clearly necessitate recirculation. CEQA requires that the public be given a meaningful opportunity to review and comment upon this significant new information in the form of a second recirculated draft EIA."

**Response:** Staff disagrees with the commenter's assertions that the RDEIA is inadequate. Please refer to previous responses to those assertions in Comment Letter R22. Therefore, adding additional substantial new information is not required.

CEQA Guidelines section 15088.5(a) provides guidance about recirculation. Specifically, a lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification. Commenter has not identified substantial new

information added to the EA necessitating recirculation. Therefore, staff does not find grounds for recirculation of the EIA. **R22-42:** The commenter states, “**VIII. Conclusion**

For all of the reasons described above, the RDEIA fails to comply with the requirements of CEQA. We respectfully request that CARB correct these errors and recirculate a revised draft EIA for public review and comment.

We reserve the right to identify new issues, provide additional information, and propose additional mitigation measures during the CARB ongoing decision-making process for the Proposed Amendments. In a subsequent transmittal, Earthjustice will submit the materials cited herein for inclusion in the record of this rulemaking.”

**Response:** The comment is conclusory of the environmental comments raised in previous responses. It does not raise any new significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter R23**

2024/09/30

Maya Khosla, MS.

**R23-1:** While the commenter submitted this comment letter to the docket for the Recirculated Draft EIA, the comments do not relate to the Recirculated Draft EIA or the Proposed Amendments. Instead the comment letter is related to the Malcolm North presentation during the Expert Advisory Committee Meeting held on September 12, 2024 on the Assembly Bill (AB) 1757 discussion. In summation the commenter states, "Thank you for the chance to comment on the Sept. 12th 2024 discussion with CARB. I appreciate the talks focusing on forests and wildfire, and the environmental justice questions and comments. Overall, the approach appeared to favor massive extractions with little or no carbon accounting conducted by the state or associated entities. The first speaker and ensuing discussions seem to have missed relevant discussion points...Regarding the first speaker: Two years ago, North et al wrote a paper supporting the removal/logging of ~80% of the forests to make them more "resistant" to climate change (fire, etc.) - i.e. massive forest extraction to supposedly save forests. The authors based the idea on "historic forest data." But the data they used in the paper left out most of the available forest data in the archives. As part of the work, they took a small subset of the archival data, showing low forest density, leaving out archival evidence of variable and higher forest density.

Several scientific papers disprove a central idea of low-density forests presented in North et al, 2022 (<https://www.yahoo.com/news/uc-researchers-omit-key-evidence-203544768>) In addition to the archives, there is an abundance of historic photographs showing variable and higher forest density.

...Coincidentally, reducing stand density to the extent being proposed would most benefit industrial-scale logging in public lands (also not mentioned). Failing to account for the carbon emissions from forest extraction would be favored by industries seeking to utilize the trees and snags for lumber, biomass energy, biofuels, and other products the state claims are "renewable" and "clean."

The public should have a chance to objectively evaluate the presentations, rather than being exposed to industrial-level forest extraction perspectives. Future meetings should provide the space for a balance of scientific findings rather than findings that suit industrial-scale logging and related removals."

**Response:** The comment is a duplicate of comments provided in Letter R9, with the inclusion of supporting figures. Please refer to response R9-1.

**C. 15 Day Comments and Responses on the Draft and Recirculated Environmental Impact Analyses**

Table 2-2: List of Comment Letters Containing Substantive Environmental Comments Received During 15 Day Comment Periods

| <b>First 15-Day Comment</b> | <b>Period</b> |                        |                                     |
|-----------------------------|---------------|------------------------|-------------------------------------|
| <b>Comment Number</b>       | <b>Date</b>   | <b>Name</b>            | <b>Affiliation</b>                  |
| 15.1-10                     | 8/19/2024     | Ellen Koivisto et al   | No Affiliation                      |
| 15.1-11                     | 8/19/2024     | Ben Keller             | No Affiliation                      |
| 15.1-12                     | 8/20/24       | Laura Haider           | Fresnans Against Fracking           |
| 15.1-14                     | 8/21/2024     | David Gassman          | No Affiliation                      |
| 15.1-18                     | 8/23/2024     | Graham Noyes           | Noyes Law Corporation               |
| 15.1-19                     | 8/23/2024     | Graham Noyes           | Noyes Law Corporation for Raizen    |
| 15.1-21                     | 8/26/2024     | Andrew Moore et al     | Georgia/Florida Soybean Association |
| 15.1-23                     | 8/26/2024     | Jean Tepperman         | Sunflower Alliance                  |
| 15.1-25                     | 8/26/2024     | Jeffrey Pekarul        | No Affiliation                      |
| 15.1-28                     | 8/26/2024     | Jennifer LeRow         | Braya Renewable Fuels               |
| 15.1-32                     | 8/26/2024     | Kevin Deinert          | South Dakota Soybean Association    |
| 15.1-33                     | 8/26/2024     | Shelby Neal            | Darling Ingredients                 |
| 15.1-36                     | 8/26/2024     | Christopher Malone     | Low Carbon Fuel Coalition           |
| 15.1-38                     | 8/26/2024     | Victoria Bogdan Tejada | Center for Biological Diversity     |
| 15.1-43                     | 8/26/2024     | Shane Snow             | No Affiliaiton                      |
| 15.1-48                     | 8/27/2024     | Jennifer Ozimkiewicz   | Bayer                               |
| 15.1-53                     | 8/27/2024     | William Barksdale      | Cargill, Inc.                       |
| 15.1-56                     | 8/27/2024     | John Rauber            | Deere & Company                     |

Amendments to the Low Carbon Fuel Standard  
Response to Comments

Comment Responses

|           |           |                        |   |
|-----------|-----------|------------------------|---|
| 15.1-63   | 8/27/2024 | Robert Hambrecht       | Allotrope Partners LLC                            |
| 15.1-65   | 8/27/2024 | James duffy            | No Affiliation                                    |
| 15.1-67   | 8/27/2024 | Katelyn Roedner Sutter | Environmental Defense Fund                        |
| 15.1-68   | 8/27/2024 | Christopher Lish       | No Affiliation                                    |
| 15.1-83   | 8/27/2024 | Renee Sharp et al      | NRDC et al  |
| 15.1-85   | 8/27/2024 | Tim Mickelson          | U.S. Canola Association                           |
| 15.1-87   | 8/27/2024 | Michale Harrison       | Valero Renewable Fuels Company                    |
| 15.1-91   | 8/27/2024 | Matt Dias et al        | The California Forestry Association et al         |
| 15.1-95   | 8/27/2024 | Jeremy Martin et al    | Union of Concerned Scientists                     |
| 15.1-101a | 8/27/2024 | Steven Berry et al     | Yale University                                   |
| 15.1-106  | 8/27/2024 | Asher Goldman          | Generate Capital                                  |
| 15.1-115  | 8/27/2024 | Grant Kimberley        | Iowa Biodeisel Board                              |
| 15.1-123  | 8/27/2024 | Orran Balagopalan      | Leadership Counsel for Justice and Accountability |
| 15.1-138  | 8/27/2024 | Monte Shaw             | Iowa Renewable Fules Association                  |
| 15.1-153  | 8/27/2024 | Joshua Wilson          | POET  |
| 15.1-154  | 8/27/2024 | Michale McAdams        | Advanced Biofuels Association                     |
| 15.1-155  | 8/27/2024 | Ashimi Patel           | Par Pacific Holdings, Inc.                        |
| 15.1-172  | 8/27/2024 | Jeremy Martin          | Union of Concerned Scientists                     |
| 15.1-177  | 8/27/2024 | Bill Magavern          | Coalition for Clean Air                           |
| 15.1-190  | 8/27/2024 | Ashley Arax            | Clean Air Task Force                              |
| 15.1-192  | 8/27/2024 | Jane Sadler            | RMI   |

Amendments to the Low Carbon Fuel Standard  
Response to Comments

Comment Responses

|          |           |                            |   |
|----------|-----------|----------------------------|---|
| 15.1-193 | 8/27/2024 | Bill Mcbee                 | North Dakota Soybean Processors               |
| 15.1-194 | 8/27/2024 | Michael Dolch              | Ag Processing Inc.                            |
| 15.1-195 | 8/27/2024 | Stefan Unnasch             | Life Cycle Association                        |
| 15.1-196 | 8/27/2024 | Ricardo Franzen Reckziegel | Be8   |
| 15.1-197 | 8/27/2024 | Thomas Malecha             | Consolitated Grain and Barge Co.              |
| 15.1-201 | 8/27/2024 | Ellie Cohen                | The Climate Center                            |
| 15.1-207 | 8/27/2024 | Robert Coviello            | Bunge   |
| 15.1-211 | 8/27/2024 | Tylre Lobdell              | Food & Water Watch                            |
| 15.1-213 | 8/27/2024 | Dr. Rina Singh             | Alternative Fuels & Chemical Coalition        |
| 15.1-215 | 8/27/2024 | SAF Stakeholder Group      | Advanced Biofuels Canada et al                |
| 15.1-217 | 8/27/2024 | Gary Hughes                | Biofuels                                      |
| 15.1-218 | 8/27/2024 | Joseph Jobe                | Sustainable Advanced Biofuel Refiners         |
| 15.1-219 | 8/27/2024 | Nikita Pavlenko            | International Council on Clean Transportation |
| 15.1-220 | 8/27/2024 | Keri Bevel                 | Anew Climate                                  |
| 15.1-221 | 8/27/2024 | Gracya Mohabir             | California Environmental Voters               |
| 15.1-222 | 8/27/2024 | Susan Saadat               | Earthjustice                                  |
| 15.1-224 | 8/27/2024 | Fariya Ali                 | Pacific Gas and Electric                      |
| 15.1-225 | 8/27/2024 | Patricia Seffens           | No Affiliation                                |
| 15.1-226 | 8/27/2024 | Bradley Wilson             | Western Energy, LLC                           |
| 15.1-228 | 8/27/2024 | Donna Warndof              | Neste   |
| 15.1-236 | 8/27/2024 | Scott Hedderich            | Nuseed  |
| 15.1-239 | 8/27/2024 | Charles Davidson           | Sunflower Alliance                            |

Amendments to the Low Carbon Fuel Standard  
Response to Comments

Comment Responses

|                                     |             |                              |   |
|-------------------------------------|-------------|------------------------------|---|
| 15.1-240                            | 8/27/2024   | Lauren Gallagher             | Communities for a Better Environment              |
| 15.1-244                            | 8/27/2024   | Janet Cox et al              | Climate Action California                         |
| 15.1-246                            | 8/27/2024   | Henry Stern                  | No Affiliation                                    |
| 15.1-255                            | 9/6/2024    | Christopher Kelstrom         | Shasta County Board of Supervisors                |
| <b>Second 15-Day Comment Period</b> |             |                              |   |
| <b>Comment Number</b>               | <b>Date</b> | <b>Name</b>                  | <b>Affiliation</b>                                |
| 15.2-169                            | 10/16/2024  | Jeremy Martin                | Union of Concerned Scientists                     |
| 15.2-170                            | 10/16/2024  | Orran Balagopalan            | Leadership Counsel for Justice and Accountability |
| 15.2-174                            | 10/16/2024  | Nina Robertson               | Earthjustice                                      |
| 15.2-183                            | 10/18/2024  | James Duffy                  | No Affiliation                                    |
| 15.2-194                            | 10/18/2024  | Sandra Franco                | Sustainable Advanced Biofuel Refiners Coalition   |
| 15.2-204                            | 10/18/2024  | Mary Elizabeth               | No Affiliation                                    |
| 15.2-227                            | 10/18/2024  | Jonathan Snoeberger          | Louis Dreyfus Company                             |
| 15.2-236                            | 10/18/2024  | Jane O'Malley                | International Council on Clean Transportation     |
| 15.2-243                            | 10/18/2024  | Dallas Gerber                | Growth Energy                                     |
| 15.2-285                            | 10/24/2024  | Joe Jobe                     | Sustainable Advanced Biofuel Refiners Coalition   |
| 15.2-286                            | 10/24/2024  | Colin Murphy                 | UC Davis  |
| 15.2-288                            | 10/24/2024  | Sara Olsen                   | Environmental Defense Fund                        |
| 15.2-291                            | 10/24/2024  | Gracyna Mohabir              | California Environmental Voters                   |
| 15.2-301                            | 10/27/2024  | Jaime Katz and Phoebe Seaton | Leadership Counsel for                            |



|  |  |  |                            |
|--|--|--|----------------------------|
|  |  |  | Justice and Accountability |
|--|--|--|----------------------------|

**1. Individual Comments and Responses from the First 15 Day Comment Period**

**Comment Letter 15.1-10**

2024/08/19  
Ellen Koivisto

**15.1-10-1:** The commenter states, “\*Biofuels produced from virgin soy or canola oil have major negative consequences, including deforestation, and incentivizing industrial agriculture that generates large amounts of greenhouse gas and other pollution, and drives up food prices. The proposed revision acknowledges such problems but continues to provide credits for the production of biofuels that include up to 20 percent from these destructive sources. And even this weak restraint will not take effect until 2028. Environmental justice advocates have repeatedly called instead for caps on vegetable-oil based biofuels.”

**Response:** Please refer to Master Response 2.

**15.1-10-2:** The commenter states, “\*The proposed draft continues to provide credits for industrial dairy "biogas." This financial support continues to incentivize the expansion of large-scale factory dairy farms, causing serious harm to the health of surrounding communities, increasing the greenhouse gases and pollution generated by the production of feed for cows confined to barns; concentrated methane emitted by pools of waste; the inevitable leakage of methane during storage and transportation; and greenhouse gas emissions produced by combustion of the product. We urge CARB to phase out support for biomethane as rapidly as possible.”

**Response:** Please refer to Master Response 1.

**Comment Letter 15.1-11**

2024/08/19

Ben Keller

**15.1-11-1:** The commenter states, “The latest proposed LCFS revision does not go far enough to reform the program. CARB should phase out support for vegetable-oil-based biofuels produced from virgin oil, since the expansion of agricultural lands for biofuel production has large negative climate impacts.”

**Response:** Please refer to Master Response 2.

**15.1-11-2:** The commenter states, “CARB must phase out support for biomethane, which is propping up the expansion of polluting factory farms.”

**Response:** Please refer to Master Response 1.

**Comment Letter 15.1-12**

2024/08/20

Laura Haider

**15.1-12-1:** The commenter states, “Airplanes should be responsible for their emissions and air pollution even if they use low carbon fuels because there are several disadvantaged communities near airports including in Sacramento.”

**Response:** While the comment does not raise issues related to the adequacy of the EIA, the comment does raise issues related to air pollution and related impacts to surrounding disadvantaged communities. The potential air quality emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. For issues related to disadvantaged communities, CEQA does not require an analysis of impacts related to environmental justice and as such, this type of analysis was not included within the EIA. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**15.1-12-2:** The commenter states, “Low carbon fuels produced from some crops are energy intensive to grow and/or transport. Then, less land to grow food would cause Californians to import more food on diesel ships and planes.”

**Response:** Please refer to Master Response 2 regarding land use changes and Master Response 3 regarding out-of-state impacts.

**Comment Letter 15.1-14**

2024/08/21

David Gassman

**15.1-14-1:** The commenter states, “Biofuels produced from virgin soy or canola oil have major negative consequences, including deforestation, and incentivizing industrial agriculture that generates large amounts of greenhouse gas and other pollution, and drives up food prices. The proposed revision acknowledges such problems but continues to provide credits for the production of biofuels that include up to 20 percent from these destructive sources. And even this weak restraint will not take effect until 2028. Environmental justice advocates have repeatedly called instead for caps on vegetable-oil based biofuels.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-18**

2024/08/21

Fueling Sustainability

**15.1-18-1:** The commenter states, “In the 15-Day Change proposed by the establishment of §95488.3(d)(2), CARB has proposed to undertake an unspecified process to potentially assign a more conservative land use change (ILUC) value when CARB determines that “no value in Table 6 is conservatively representative of a particular region/feedstock/fuel combination.” The complete proposed subsection contains the following language:

*(2) The Executive Officer may determine that no value in Table 6 is conservatively representative of a particular region/feedstock/fuel combination and assign a more conservative LUC value. Such determination must be based on the best available empirical data, including but not limited to satellite-based remote sensing data for land cover monitoring, crop yields, and emission factors from the AEZ-EF model or carbon stock datasets. For feedstocks not listed in Table 6, the Executive Officer may determine and assign an appropriate LUC value based on empirical land cover data, crop yields, and emission factors.*

To ensure transparency in determining carbon intensities under the LCFS, the Executive Officer should establish a clear process for determining and adjusting ILUC values. As CARB is well-aware, life cycle analysis (LCA) issues are complex and controversial and ILUC determinations can make or break a particular fuel’s opportunity to participate in the California LCFS marketplace. In addition, CARB’s initial determination for a particular region/feedstock/fuel combination will likely establish an ILUC value that will be applied to subsequent pathways that utilize this particular region/feedstock/fuel combination. Thus it is important that CARB establish a robust and public process prior to reaching these determinations.

This process should begin with preliminary communication and notification, with CARB committing to inform stakeholders in advance of any proposed ILUC value adjustments. Additionally, CARB should provide transparency in the methodologies and assumptions used. Before finalizing any changes to ILUC values, CARB should engage in a public consultation process, allowing for technical discussions where industry experts, stakeholders, and the public can contribute input on the proposed values and methodologies.”

**Response:** Please refer to Master Response 2.

**15.1-18-2:** The commenter states, “We take this opportunity to request CARB’s attention to the study and recognition of Brazilian farming practices, yields of double-cropped soy and corn per acre, the role of renewable biomass, the nature of second-crop corn and other factors that establish second crop Brazilian corn as a low-CI and low-ILUC feedstock and support Low-CI values for Brazilian Second Crop Ethanol. The main factors are highlighted below and warrant a robust review.

- 1) Improved agricultural practices and soybean-corn multi-cropping systems reduce the risk of ILUC.
- 2) Brazil has soybean land available that can be used to expand the production of second-crop corn, without requiring additional land.
- 3) A negative ILUC for Brazilian corn ethanol is documented in scientific literature.

Due to these factors, other jurisdictions with rigorous oversight programs have determined zero ILUC value for other multi-crops under specific conditions including the following.

- 1) The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) has determined zero or negative ILUC values for secondary (oilseed) crops.
- 2) CORSIA has determined a zero ILUC value for sequential cropping in general which includes 2nd crop corn.
- 3) Brazilian corn ethanol is classified as a Low LUC risk by the ISCC/CORSIA.”

**Response:** Please refer to Master Response 2.

**15.1-18-3:** The commenter states, “FS respectfully submits that this LCFS proposal would have benefitted from a stricter reading of the California Administrative Procedure Act particularly given the tremendous wildfire risk in California that is fueled by such massive and dangerous quantities of forest biomass that the State has established a million-acre fire treatment strategy as further discussed by the comment letter of the California Forestry Association.

From the perspective of FS, the forest biomass scheme proposed in the 15-Day Changes is as completely unworkable in Brazil as it is in California. We do not think it feasible to propose simple fixes to make the scheme workable and would recommend that it be completely redesigned. However, we think this redesign is a process that will require many months if not a year. We also think it imperative that the many positive changes that CARB has made to the LCFS program should not be further delayed in terms of implementation. Therefore, we would recommend that CARB delete all of the new language pertaining to woody biomass from the LCFS rulemaking package and initiate a separate focused rulemaking that involves stakeholders and California agencies with forestry expertise in the process.”

**Response:** While the comment does not raise issues related to the adequacy of the EIA, the comment recommends CARB remove language pertaining to woody biomass from the LCFS rulemaking package due to issues related to wildfire associated with the 15-day changes to the Proposed Amendments. The wildfire impacts associated with reasonably foreseeable compliance responses related to the Proposed Amendments are discussed in pages 138 and 139 of the Draft EIA. The 15-day changes have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA.

Therefore, no changes to the EIA are required in response to this comment, and no further response is needed.

**15.1-18-4:** The commenter states, “In terms of preliminary comments from FS to inform this forest biomass process, we would submit the following. To ensure a comprehensive and accurate assessment of the life cycle analysis (LCA) for renewable biomass used in combustion — whether it is a forest/agricultural/industrial residue or a purpose-grown forest biomass — CARB should establish the following clear and detailed minimum requirements:

- a. Inclusion of Clear Definitions for Each Supply Chain Element:** This includes defining the Point of Origin, First Gathering Point, Processing Unit, and other critical links in the biomass supply chain. Clear definitions will ensure consistency and transparency in the assessment process.
- b. Specify Emission Factors for Biomass Combustion:** We request specific definitions regarding where the LCA for biomass combustion begins and ends. This clarity is essential for accurately calculating the carbon footprint and understanding the environmental impact of biomass used for energy generation.
- c. Definition of Waste/Residue:** To avoid ambiguity, it is essential for CARB to provide a precise definition of what qualifies as waste or residue, particularly in the context of energy generation. This clarity will be key in determining whether or not to account for upstream emissions of biomass in Tier 2 submissions.”

**Response:** Please refer to Master Responses 2 and 5.

**Comment Letter 15.1-19**

2024/08/23

Raizen Energia S.A.

Paulo Macedo, International Relations Director

**15.1-19-1:** The commenter states, “We think it important to consider that via Section 95488.3(d) and associated Table 6, CARB has given itself the authority to assign a "more conservative" indirect land use change (ILUC) value when CARB determines that Table 6 "does not accurately reflect" the ILUC of a region/feedstock/fuel. CARB may also add new feedstocks/fuels to Table 6. Consistent with other LCFS provisions, we would recommend that CARB's process for changing ILUC values provides notice to stakeholders and the opportunity for public comment and particularly technical input. As CARB is well-aware, life cycle analysis (LCA) issues are complex and controversial and ILUC determinations can make or break a particular fuel's opportunity to participate in the California LCFS marketplace.

In addition to establishing a notice and comment process, CARB should also be open to the possibility of lowering an ILUC value rather than only adjusting ILUC values in a manner that is unfavorable to non-US sources of feedstock and fuels. We recognize that CARB will be consistently taking a conservative approach to ILUC values but cannot discern a sufficient rationale for CARB to only move ILUC values for non-US fuels in one direction. To the extent that other regions of the world can provide feedstocks and fuels that are found to cause less land use change than US fuels, the resulting fuels should receive CI scores that reflect that performance.”

**Response:** While the comment does not raise issues related to the adequacy of the EIA, the comment raises issues around CARB’s ability to adjust ILUC values as well as suggests notice to stakeholders and the opportunity for public comment and technical input be included in the ILUC value process. For issues related to ILUC values, please refer to Master Response 2. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.



**Comment Letter 15.1-21**

2024/08/27

Georgia/Florida Soybean Association

Andrew Moore, President

**15.1-21-1:** The commenter states, “Placing an artificial limit on the market, combined with the inclusion of sustainability guardrails, as proposed will fail to reduce emissions and will only increase costs. Georgia and Florida farmers remain frustrated that CARB insists on using data and methods that are over two decades old to set carbon intensity (CI) scores for soy, while refusing to consider new economic data and failing to consider the potential indirect emission impacts their expanding preference for waste is having.”

**Response:** While this comment does not raise issues related to the adequacy of the EIA, the comment expresses disagreement with the age of the data and methods used to establish CI values within the LCFS Regulation, particularly for soy. For issues related to CI and ILUC values, please refer to Master Response 2. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**Comment Letter 15.1-23**

2024/08/27

Sunflower Alliance

Jean Tepperman, Co-Coordinator

**15.1-23-1:** The commenter states, “The proposed draft continues to provide credits for the production of industrial dairy “biogas” despite the many harmful effects of this financial support. It incentivizes the expansion of large-scale factory dairy farms, causing harmful effects on the health of surrounding communities, including increased release of ammonia, water pollution, and increased truck traffic; encourages the inevitable leakage of methane during storage and transportation; and generates greenhouse gas emissions created by combustion of the product. We urge you to phase out support for biomethane as possible”

**Response:** Please refer to Master Response 1.

**15.1-23-2:** The commenter states, “Unlike previous versions of the LCFS, the new proposal does not require the aviation industry to take any responsibility for the combustion of fossil fuel-based jet fuel, even for intrastate travel. This is a step backward, excluding a major source of greenhouse gases and pollution from fossil fuel combustion.”

**Response:** This comment expresses an opinion about the removal of jet fuel from the updated LCFS Regulation. The potential air quality and GHG emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. All other resources areas are adequately analyzed under the Draft EIR. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment.

**15.1-23-3:** The commenter states, “It can’t be said enough that biorefining is still a species of refining, and, as such, releases dangerous emissions with dire impacts on frontline communities. The production of renewable diesel is *at best* an interim solution, whose necessity we hope will be short-lived.”

**Response:** This comment expresses an opinion about biorefining as well as associated impacts to frontline communities. The EIA evaluated the impacts associated with regulatory compliance with the Proposed Amendments, including biorefining. For issues related to frontline communities, CEQA does not require an analysis of impacts related to environmental justice and as such, this type of analysis was not included within the EIA. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**15.1-23-4:** The commenter states, “Biofuels manufactured from virgin soy or canola oil are particularly problematic, with major negative consequences that include increased food prices, global deforestation, and the incentivization of industrial agriculture, which generates high quantities of greenhouse gas and toxic pollution. We are truly appreciative that the proposed

revision acknowledges the seriousness of these problems. But we are dismayed that the LCFS revision continues to provide credits for the production of biofuel that includes up to 20 percent of this destructive feedstock.”

**Response:** Please refer to Master Response 2 for a discussion on impacts, including deforestation, associated with land use changes and Master Response 3 for a discussion on out-of-state impacts.

**Comment Letter 15.1-25**

2024/08/24

Jeffrey Pekrul

**15.1-25-1:** The commenter states, “Incentivizing the buildout of dirty factory farms not only enables pollution but disproportionately harms low-income communities and communities of color. Factory farms, predominantly situated in these marginalized areas, inflict severe damage on air, water, public health, rural economies, and overall quality of life. Collecting methane from factory farm cesspits does nothing to alleviate the massive harm mega-dairies and other large factory farms do to these communities.”

**Response:** While the comment does not raise issues related to the adequacy of the EIA, this comment raises concerns around factory farming and associated pollution as well as impacts to low-income communities and communities of color. In regard to issues related to factory farming, please refer to Master Response 1. For issues related to disadvantaged communities, CEQA does not require an analysis of impacts related to environmental justice and as such, this type of analysis was not included within the EIA. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**Comment Letter 15.1-28**

2024/08/26

Braya Renewable Fuels

Todd O'Malley, Chief Executive Officer

**15.1-28-1:** The commenter states, "Counter-intuitively, implementation of the BBD Limitation may increase greenhouse gas emissions. Vegetable oils are a significant portion of the feedstock mix and a significant driver of the impressive volume growth in California's renewable diesel pool. In particular, we express concern that CARB's evaluation of a scenario limiting biomass-based diesel contained in the April 10, 2024 California Low Carbon Fuel Standard Workshop resulted in (i) an overall increase of nearly 1,000 MMT CO<sub>2</sub>e in greenhouse gases, (ii) an increase in 2030 fossil diesel usage of approximately 1 billion gallons and (iii) extended the overall life of fossil fuels in California, as compared to CARB's proposed scenario.<sup>4</sup> Fundamentally, a reduction of feedstocks options will almost certainly result in decreased renewable diesel production."

**Response:** This comment expresses an opinion on the feedstock cap included in the updated LCFS Regulation presented in the 15-day changes. Please refer to Master Response 2. While the comment does not raise issues related to the adequacy of the EIA, impacts related to the feedstock cap under the Proposed Amendments was evaluated within the Recirculated EIA. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**Comment Letter 15.1-32**

2024/08/27

South Dakota Soybean Association  
Kevin Deinert, President

**15.1-32-1:** The commenter states, “Artificial restrictions on the market, combined with the inclusion of sustainability limits being proposed, will significantly increase costs, but will not reduce emissions. South Dakota farmers remain frustrated that CARB relies on decades-old data and methods to set carbon intensity (CI) scores for soy while neglecting new economic data. CARB needs to seriously consider the potential indirect emission impacts their expanding preference for waste is having.”

**Response:** While this comment does not raise issues related to the adequacy of the EIA, the comment expresses disagreement with the age of the data and methods used to establish CI values within the LCFS Regulation, particularly for soy. For issues related to CI and ILUC values, please refer to Master Response 2. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**15.1-32-2:** The commenter states, “The determination to make such drastic changes to previous CARB proposals so late in the process was shocking to the soybean and biofuels industries. That CARB has changed from arguing that, based on the modeling, a vegetable oil feedstock cap was detrimental to the goals of the LCFS at the April public workshop, to now recommending a strict cap on those feedstocks without employing recent data or science, is confusing to grasp. CARB’s own April 10th analysis showed that a feedstock cap would increase greenhouse gas (GHG) emissions in California, which conflicts with requirements in AB-32.

**Vegetable Oil Feedstock Cap**

The inclusion of a virgin vegetable oil feedstock cap in the 15-day changes was alarming to farm families and the entire biofuels value chain, as reflected in market activity. You may understand our surprise based on the April 10 workshop in which CARB noted that liquid fuels would continue to be needed in the transportation sector in California for at least the next decade. In that same workshop, CARB also claimed that the imposition of a virgin vegetable oil feedstock cap would increase the utilization of petroleum diesel in the transportation sector. In the staff presentation on April 10, they noted that nearly eighty percent of vehicles on the road in California will use combustion engines through 2030. Further, they noted that such a stringent cap on virgin vegetable oils may result in 2.8 billion gallons of fossil diesel utilization in 2030, versus 1.9 billion gallons using a scenario that does not impose the cap proposed by the Environmental Justice Advisory Committee.”

**Response:** This comment expresses an opinion on the feedstock cap included in the updated LCFS Regulation presented in the 15-day changes. Please refer to Master Response 2. While the comment does not raise issues related to the adequacy of the EIA, impacts related to the

feedstock cap under the Proposed Amendments was evaluated within the Recirculated EIA. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**Comment Letter 15.1-33**

2024/08/26

Darling Ingredients

Shelby Neal, VP - Renewables & Energy Policy

**15.1-33-1:** The commenter states, “While we are pleased to see the rulemaking moving forward, we must also express our disappointment that intrastate jet fuel remains exempt from obligations under the LCFS program. We believe this decision could hinder SAF adoption in the state and prevent Californians from realizing substantial air quality benefits, including reduced emissions of PM, NOx, and SOx. If Governor Newsom’s goal of 20% SAF uptake is to be achieved, we believe additional measures are necessary<sup>3</sup>. Fortunately, policy options are available, and we hope to work with CARB to explore and potentially implement those strategies.”

**Response:** This comment expresses an opinion about the removal of jet fuel from the updated LCFS Regulation. The potential air quality and GHG emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. All other resources areas are adequately analyzed under the Draft EIR. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment.



**Comment Letter 15.1-36**

2024/08/26

Christopher Malone

**15.1-36-1:** The commenter states, “We are strong advocates for rigorous lifecycle accounting (LCA) methods that precisely quantify the lifecycle emissions from biofuels and that recognize and incentivize lower carbon feedstocks. From a LCA perspective, “corn is not just corn.” To the contrary, corn and other crops can be grown on soil using a wide variety of techniques and inputs that substantially impact real-world carbon intensity (CI). We encourage the Board to direct staff to dedicate time and resources to analyze the lifecycle issues pertaining to crop-based feedstocks and report back to the Governing Board. This focused research, analysis, and reporting by CARB staff will enable and inform potential expansions to the LCFS regulations to include field-based practices, the recognition of soil organic carbon, and the harnessing of other CI-reducing techniques and technologies with the next update to the LCFS regulations.”

**Response:** Please refer to Master Responses 2 and 5.

**15.1-36-4:** The commenter states, “We are asking the Board to direct staff to investigate how the agriculture sector can be optimized to produce low-carbon biofuels to meet the state’s SAF goal. Specifically, we are requesting the Board to prioritize policy discussions and the associated technical analysis related to low-carbon feedstocks for the production of SAF. This technical analysis should include a thorough lifecycle analysis to determine the extent to which supplies of sustainable biofuels produced from various feedstocks can be expanded while not converting additional land to agricultural uses. This technical analysis should be informed by the other primary LCA methodologies including Argonne GREET. To ensure the timely analysis of this information, we request that the Board direct staff to report back to the Board by the end of 2025 on the results of lifecycle analysis and progress toward developing policies to encourage the production of SAF.”

**Response:** Please refer to Master Responses 2 and 5.

**Comment Letter 15.1-38**

2024-08-27

Center for Biological Diversity

John Fleming, PhD, Senior Scientist

Victoria Bogdan Tejeda, Staff Attorney

**15.1-38-1:** The commenter states, “This loophole evidences a fundamental misunderstanding of how CCS works. CCS does not wholly eliminate GHG emissions from any industrial process. Simply putting CCS onto a refinery does not mean the climate intensity of that production is acceptable. No CCS project has, or is, promising 100% CO<sub>2</sub> capture. While modeling often relies on an assumed 90% capture rate, this is far from what is achieved in reality.<sup>8</sup> One recent real-world California example is the Aera CarbonFrontier project proposed in Kern County. That Project’s CEQA review shows that for at least the first seven years, the project will be net positive in GHG emissions, even while running CCS on its natural gas-fired power plants.<sup>9</sup>”

**Response:** This comment provides opinion on the effectiveness of CCS systems with refinery operations. As a compliance response for the Proposed Amendments CCS was full analyzed for all resource areas, including GHG emissions, in the EIA. This comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**15.1-38-2:** The commenter states, “Steam methane reformation of biogas, including that paired with CCS, and gasification or pyrolysis of biogenic resources (e.g. woody biomass and biogas), should be explicitly excluded because of their associated harms. Woody biomass, as a feedstock (e.g. in gasification or pyrolysis) or energy source to make hydrogen, harms the climate,<sup>10</sup> communities, and ecosystems with significant emissions of CO<sub>2</sub><sup>11</sup> and criteria and other health-harming pollutants.<sup>12</sup> As the IPCC, the federal Environmental Protection Agency’s Science Advisory Board, and other scientists have established, wood bioenergy should not be assumed to be carbon neutral;<sup>13</sup> Using methane to produce hydrogen increases methane leakage risk, with one biogas plant study finding that leaked methane can be as high as 14.9% of total methane production.<sup>14</sup> There is also a significant pollution burden from biogas facilities near communities.<sup>15</sup> The LCFS should not incentivize and subsidize feedstocks that harm the climate and pollute the same communities that have historically borne the pollution burden of our status quo energy portfolio.”

**Response:** Air quality impacts associated with the Proposed Amendments were analyzed in Chapter 3.0 of the Recirculated EIA. For a more detailed response related to air quality impacts please refer to Master Response 4. For issues related to disadvantaged communities, CEQA does not require an analysis of impacts related to environmental justice and as such, this type of analysis was not included within the EIA.

**15.1-38-3:** The commenter states, “Relying on crop-based biofuels results in both direct and indirect land use change emissions that worsen the climate crisis, counter to their intended purpose. For example, in an analysis of 17 potential alternative-fuel pathways looking at

different feedstocks, technologies, and world regions, researchers found that using virgin vegetable oil had the highest indirect land-use change emissions because of links to high deforestation and peat oxidation in southeast Asia, driven by palm expansion.<sup>21</sup> In the same study, it was found that producing biofuels from any vegetable oil in any region, including corn and soy in the U.S. context, would encourage palm oil expansion and associated peat oxidation in southeast Asia due to substitutions among vegetable oils and international trade.<sup>22</sup> Thus, high indirect land-use change emissions from virgin vegetable oil biofuel pathways undermine some, if not all, of the greenhouse gas savings from these fuels.<sup>23</sup>

There could also be unforeseen harms to communities and the environment. For instance, a 2017 study found that increased production of crop-based biofuels heavily contributes to global water scarcity and is not the best option for bioenergy.<sup>24</sup> Meanwhile, a 2016 study found that, just in the United States, about 140 million people could be fed with the resources for bioethanol, and about 10 million people could be fed with the resources for biodiesel, indicating the threat of crop-based biofuels to global food security.<sup>25</sup> Also, with increased production of crop-based biofuels, there is the potential for increased nutrient and pesticide runoff to surface waters and contamination of groundwater due to crop cultivation.<sup>26</sup>

Another harm from crop-based biofuels is the impact to communities from biofuel refining and resulting criteria pollutant emissions. Crop-based biofuels are most often produced using the Hydroprocessed Esters and Fatty Acids (HEFA) pathway, which reacts crop feedstock with hydrogen at high temperatures and pressures to form fuel.<sup>27</sup> Because of the high temperatures and extremely high pressures, runaway increases in temperature are common, which result in operators flaring refinery gases to bring conditions back under control. However, in doing so, toxic and smog-forming air contaminants are emitted such as particulate matter, sulfur dioxide, and hydrocarbons that worsen air quality. Because HEFA processes require more hydrogen than petroleum refining, it is expected that hydro-conversion-related flaring would be worse with HEFA refining, along with explosion and fire risk.<sup>28</sup> With refineries most often sited in low-income communities and communities of color,<sup>29</sup> environmental justice harms are exacerbated by the presence of HEFA refining and would worsen with crop-based biofuel expansion.

Many of the risks associated with crop-based biofuels would have been mitigated if CARB had accepted the amendments in the Comprehensive Environmental Justice Scenario proposed by CARB's Environmental Justice Advisory Committee (EJAC). The proposal was to "[c]ap the use of lipid biofuels (commonly known as crop-based biofuels) at 2020 levels, about 855 million gallons, pending an updated risk assessment to determine phase out timelines for high-risk, crop-based feedstocks."<sup>30</sup> Capping the use of lipid biofuels could spur the development of less deleterious alternatives such as the use of true waste products in biofuel production such as municipal solid waste and push the needed transition to battery-electric in shipping and trucking,<sup>31</sup> all while preventing the expansion of crop-based biofuel harms. Instead, crop-based biofuels are treated as the unavoidable alternative to fossil fuels, locking in the threat to communities and the environment. CARB should revisit the amendments originally proposed by EJAC."

**Response:** For issues related to impacts caused by land use changes, please refer to Master Response 2. For issues related to air quality impacts please refer to Master Response 4. For issues related to disadvantaged communities, CEQA does not require an analysis of impacts related to environmental justice and as such, this type of analysis was not included within the EIA. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**15.1-38-4:** The commenter states, “Relying on such biofuels results in both direct and indirect land use change emissions that worsen the climate crisis, counter to their intended purpose. Rather than accept the true and full climate costs of aviation and invest more seriously in research for zero-emission technologies like electric aircraft, the industry has set its sights on SAFs, equating to delays in true climate progress in the aviation sector. To minimize harms from the aviation sector, CJF should be fully incorporated in the LCFS—including that for intrastate, interstate, and international flights—while eliminating from crediting crop-based and other problematic biomass biofuels, and only allowing other biofuels that meet strict and transparent sustainability criteria.”

**Response:** Please refer to Master Response 2. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**15.1-38-5:** The commenter states, “First, the use of forest biomass to produce biofuels is likely to employ gasification and pyrolysis, two highly polluting techniques. The gasification of biomass at high temperatures (800-1200°C) produces a “syngas” containing large amounts of CO<sub>2</sub>, as well as methane (CH<sub>4</sub>), carbon monoxide (CO), and hydrogen (H<sub>2</sub>), in addition to liquid hydrocarbons and tar, solid char and ash residues, and a wide array of air pollutants. The pyrolysis of biomass additionally produces pyrolytic oil and larger quantities of char.<sup>37</sup> Further, biomass gasification and pyrolysis produce a wide range of health-harming pollutants including fine particulate matter, NOx, SOx, benzene, toluene and xylenes

(BTEX), tars and soot, and persistent organic pollutants such as polycyclic aromatic hydrocarbons (PAHs) (e.g., naphthalene), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs).<sup>38</sup> Importantly, gasification and pyrolysis of biomass are significant sources of fine particulate matter (PM<sub>2.5</sub>) that can penetrate deeply into the lungs, even enter the bloodstream, and cause serious health problems.<sup>39</sup> Fine particulate matter pollution is linked to a higher risk of premature death, heart disease, stroke, and aggravated asthma.<sup>40</sup> With biomass gasification and pyrolysis project proposals slated for Central Valley communities already overburdened with pollution,<sup>41</sup> to sanction forest biomass under the LCFS would contribute to environmental injustice as well, given the overarching threats of air pollution, water pollution, noise pollution, CO<sub>2</sub> leakage, and ecosystem damage.

Similar to biomass combustion, gasification and pyrolysis of biomass produce large quantities of CO<sub>2</sub> as well as methane emissions that worsen the climate emergency. The claim that woody biomass is a carbon neutral feedstock has been thoroughly debunked,<sup>42</sup> given the lost carbon storage and sequestration from extracting biomass, and the significant CO<sub>2</sub> emissions

during biomass processing and gasification, pyrolysis, or combustion.<sup>43</sup> The combustion, gasification, and pyrolysis of trees and other forest material—including residues considered to be “waste”—leads to a net increase of carbon emissions in the atmosphere for decades to centuries.<sup>44</sup>

CARB’s proposed specifications for forest biomass waste, however well-intentioned, are too vague to limit forest degradation, nor will they meaningfully reduce the significant harms to the climate, communities and forests detailed above. Almost all forest logging and thinning projects are done under the justification that they will promote forest health and resilience and/or are needed for fuels reduction. Trees and other forest vegetation of any size can be lopped and masticated into “small-diameter” residues and called “non-merchantable.” Incentivizing the commodification of forest materials under the LCFS will lead to the removal of more biomass from the forest than would happen if these materials were not commodified, threatening forest ecosystems and forest carbon storage. Management practices should instead prioritize leaving residues or wastes in the forest to maintain soil organic carbon, retain vital nutrients in the ecosystem, and support wildlife habitat.”

**Response:** For issues related to impacts caused by land use changes, please refer to Master Response 2. For issues related to air and water quality impacts please refer to Master Response 4.

**Comment Letter 15.1-43**

2024-08-24

Shane Snow

**15.1-43-1:** The commenter states, "The current flaws in the LCFS, such as "avoided methane crediting" and inaccurate life cycle assessments, not only enable pollution but disproportionately harm low-income communities and communities of color. Factory farms, predominantly situated in these marginalized areas, inflict severe damage on air, water, public health, rural economies, and overall quality of life.

I urge you to consider and prioritize the following reforms to the LCFS:

1. Eliminate "avoided methane crediting" in 2024.
2. Address inaccuracies in the Life Cycle Assessment that ignore associated up- and downstream greenhouse gas emissions from factory farm gas production.
3. Remove the 10-year "grace period" for factory farm gas producers."

**Response:** Please refer to Master Response 1 for a response related to methane crediting. For issues related to disadvantaged communities and with regards to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**Comment Letter 15.1-48**

2024-08-21

Bayer AG - Crop Science Division

Jennifer Ozimkiewicz, Senior Vice President, Global Soybean and Biofuels Strategy  
Head

**15.1-48-1:** The commenter states, “**Soy & Canola 20% Cap**

While Bayer recognizes the intent behind the 20% cap on soy and canola proposed by CARB in the 15-day package, and the importance of ensuring other state markets have feedstock availability, we urge a reevaluation of the unintended consequences of such a cap. Limiting the use of renewable, plant-based biofuels made from crops grown on existing cropland in North America will result in greater reliance on foreign feedstocks of less certain origin and inhibit the ability to reach emission reduction goals. Further, because crop-based biofuels are already subject to ILUC and indirect emissions analysis, this cap would be redundant. We urge reconsideration of this approach, especially given CARB's own analysis presented at the April 2024 workshop, which acknowledged that the diesel pool in California cannot be entirely replaced by electrification and such a cap would result in more fossil fuel usage, undermining California's emission progress. “

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-53**

2024-08-27

Cargill, Inc.

William Barksdale, Managing Director

**15.1-53-1:** The commenter states, “A key driver for the long-term success of the industry will be the continued reduction in the carbon intensity of crop-based feedstocks. The growing adoption of sustainable farming practices results in the production and availability of lower carbon-intensity feedstocks for bioenergy. Farmers are increasingly adopting these practices to further reduce and sequester carbon, in addition to seeing clear economic and productivity gains. Recognizing the opportunity and imperative of regenerative agriculture, Cargill is supporting and incentivizing these sustainable practices among growers in our supply chain. We encourage CARB to promote the adoption of these reduction mechanisms by making available pathways which incorporate regenerative agriculture practices.

CARB’s proposed cap on soybean and canola oil feedstocks disadvantages the North American grower who is integral to the decarbonization of our global food systems. In the years ahead, the global food system will be subjected to the indirect consequence of reducing the available production of soybean and canola oil – which is to reduce contingency supplies available to the food system. In essence, CARB’s proposed policy guidance calls for greater decarbonization without its most flexible and scalable feedstock supply. We believe this undermines the critical imperative to provide food and to decarbonize the global transportation supply chain.”

**Response:** Please refer to Master Response 2.



**Comment Letter 15.1-56**

2024-08-27

Deere & Company

John W. Rauber, Jr.

**15.1-56-1:** The commenter states, “Deere believes that the proposed limitation on credits for biomass-based diesel produced from virgin soy and canola oils is both unnecessary and counterproductive to the state’s decarbonization goals. By limiting LCFS credits for biomass-based diesel, proposed subsection 95482(i) would effectively cap the volume of biomass-based diesel allowed into California’s transportation fuel supply. Once the proposed 20 percent cap is met, additional low-carbon fuels made from soy and canola oils would be assigned a pre-determined carbon intensity score that does not reflect the sustainable, well-documented carbon reduction benefits they provide<sup>1</sup>.”

The exponential growth in adoption of climate-smart ag practices, precision technologies and data-enabled farming have brought about significant sustainability gains and production efficiencies<sup>2</sup>. According to USDA data, most recent increases in U.S. production of soybeans, for example, can be attributed to increases in yields per acre. Over the past three decades, average U.S. soybean yields have risen from 32.6 to 49.5 bushels per acre, a nearly 52 percent increase.<sup>3</sup> As productivity has increased, so has farmers’ ability to generate and analyze field-level data that allows for measuring, documenting and calibrating the carbon-reducing impacts of climate-smart practices. The use of precision equipment and technologies has created a virtuous cycle of generating the data to track performance, and then the insights to improve that performance over time.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-63**

8/27/2024

Allotrope Partners LLC, and its subsidiary,  
Allotrope Cellulosic Development Company LLC  
Robert Hambrecht, Partner

**15.1-63-1:** The commenter states, “It is important to consider as well that many forest communities in California were initially founded around timber mills located in the proximity of large private landholdings (i.e. industrial timberlands) to assure access to wood for the mills. As a result, today, many of the most at-risk and under-served rural communities are surrounded by industrial forestlands whose biomass would be much less accessible under the draft definition in Section 95488.8(g)(1)(A)(3). As proposed, all forestlands, both industrial and non-industrial, would remain at a higher risk of destruction from wildfire and natural degradations such as beetle rot and unrestrained undergrowth. This is because while only industrial forestlands are excluded, doing so likely will make projects such as ours unsustainable and thus remove an important incentive/sustainability measure for performing wildfire treatments on non-industrial forestlands.”

**Response:** The wildfire impacts associated with reasonably foreseeable compliance responses related to the LCFS Regulation are discussed in pages 138 and 139 of the Draft EIA. The changes to the LCFS Regulation have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA. Therefore, no changes to the EIA are required in response to this comment, and no further response is needed.

**Comment Letter 15.1-65**

2024-08-27

Jim Duffy

**15.1-65-1:** The commenter states, “3. Staff should be directed to correct the air quality assessment in the Draft Environmental Impact Analysis. It is disappointing to see staff rely on science and mathematics when it is convenient, but then ignore both when they don’t support their point of view. For example, staff clearly believes in statistics when a study shows that a higher rate in growth of dairies with digesters is not statistically significant (see slide 47 of a recent CARB presentation on dairies), but they don’t believe in statistics when a study shows that using renewable diesel in new technology diesel engines does not result in statistically significant reductions in tailpipe emissions (see page viii of the recent Low Emission Diesel Study prepared for CARB7). As a second example, staff continue to assume that a reduction in the consumption of fossil diesel in California will result in a proportional reduction in oil production in California and then attribute the reduced criteria pollutant and GHG emissions associated with the oil production decline to the LCFS (see page B-1 of the SRIA for equations). These calculations ignore the obvious fact that California oil production has been in terminal decline for decades (see figure 1 on page 7 of the California State Oil and Gas Supervisor Annual Report 2020) and oil production will continue to decline rapidly without the LCFS. Furthermore, staff has demonstrated no link between a decline in California refinery output and a decline in oil production in the State. CARB staff should provide the Board with the best available information to make an informed decision, not skew the data and calculations to support a pre-determined policy outcome. It is unfortunate to see CARB selectively use science and mathematics.”

**Response:** With regard to dairy and swine manure biomethane, refer to Master Response 1. With regard to the air quality and greenhouse gas emissions assessments for transportation fuels, please refer to Master Responses 4 and 5.

With regard to declining oil production emissions in California, staff’s modeling is consistent with the modeling developed for the 2022 Scoping Plan Update, which projected declines in petroleum supply in tandem with declines in petroleum demand. As the vast majority of oil produced from California wells is used in California refineries to supply the California petroleum market, staff believe the estimates of upstream air quality benefits associated with the LCFS amendments are reasonable.

The decline in oil production in California since 1984 is a result of many factors, including global economics and maturing oil fields. Those factors include state energy and transportation policies that have set clear goals of reducing oil demand since the late 1900s. Since before CARB’s inception in 1967, California worked to reduce the impacts of combustion vehicles, and California has worked for decades with the federal government to reduce oil demand through improvements in vehicle efficiency. In 1990, CARB issued the first ZEV regulation, and then the first greenhouse gas emission standards in 2004. Since the passage of AB 32 in 2006, California has developed bold, creative, and durable policy solutions to protect our environment and public health. In fact, California met the target established in AB 32—a return

of GHG emissions to 1990 levels by 2020—six years ahead of schedule. The vehicle efficiency and ZEV regulations CARB has developed have been adopted by 13 other states, and are directly linked to declines in petroleum demand and associated declines in oil production and new well permitting in California.

The LCFS is an important part of the State’s transportation decarbonization plans and the phase out of fossil oil, as evidenced by the Board’s approval of the LCFS regulation in 2009 as a discrete early action measure under the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32, Núñez and Pavley, Chapter 488, Statutes of 2006; Healthy and Safety Code, §§ 38500 *et seq.*). The LCFS provides essential market support for the transition to zero emissions vehicles identified in the 2022 Scoping Plan for both light-duty and heavy-duty, by incentivizing both ZEV purchases and the ZEV fueling infrastructure needed as ZEV deployment grows. To conservatively estimate the emission benefits of reduced upstream oil extraction attributable to the LCFS proposal, staff looked at only the proportion of modeled demand reduction associated with fossil diesel declines. Staff determined that it was appropriate to attribute these benefits to the LCFS proposal based on the expectation that diesel demand will persist longer than gasoline demand in California, and that future in-state extraction reductions may be limited by the pace of diesel demand reductions. While staff cannot precisely predict further declines in oil production, it is reasonable to attribute a portion of expected production declines to the LCFS given its clear market signal to replace fossil fuel use in California with low-carbon fuels. Because crude oil from California is “heavy,” meaning it is process-intensive to refine, it is unlikely to be exported in significant quantities for use in non-California refineries given the additional cost and complexity to refine California crude. Therefore, as California reduces its demand for fossil fuel refining and as alternative fuel production in and supply to California increases driven by the strengthened proposed LCFS carbon intensity benchmarks, CARB staff expect continued declines in in-state extraction and its associated environmental impacts.

Regarding the 2021 Low Emission Diesel (LED) Study: Biodiesel and Renewable Diesel Emissions in Legacy and New Technology Diesel Engines, please refer to response to comment R22-26.

**Comment Letter 15.1-67**

2024-08-27

Environmental Defense Fund

Katelyn Roedner Sutter, California State Director

**15.1-67-1:** The commenter states, “One of the most significant local air pollutants of concern surrounding biogas systems is ammonia. Approximately 80% of ammonia emissions in the United States, encompassing emissions from both natural sources and human activities, are from agricultural sources. Notably, around 60% of these national emissions stem from livestock manure.<sup>2</sup> Ammonia is a health concern, as it has the potential to form fine particulate matter (PM<sub>2.5</sub>), which can lead to respiratory and pulmonary issues in nearby communities.<sup>3</sup> Ammonia emissions also present an environmental risk contributing to soil acidification and/or eutrophication in downwind ecosystems.<sup>4</sup>

During anaerobic treatment or storage, manure organics decompose in an oxygen-free environment and produce methane, ammonia, and other gases. In open-system manure storage or treatment lagoons, as the manure undergoes anaerobic decomposition, most of these compounds are lost to the atmosphere. If the anaerobic decomposition takes place in an enclosed environment (such as a covered lagoon or anaerobic digester), the methane degases from the liquid phase and is captured under the cover where it can be collected and flared or used as a fuel. However, the ammonia stays in the solution and hence the dissolved ammonia becomes concentrated inside the anaerobic digester, particularly relative to that remaining dissolved in an open lagoon.

Once the digestate from the anaerobic digester or covered lagoon is discharged from beneath the cover into an open lagoon or storage tank, the ammonia is lost to the atmosphere in the same quantity or perhaps somewhat higher quantities, relative to that lost in an open lagoon, presenting a serious health risk to downwind communities.

We strongly recommend that any LCFS credit generated from biogas created from manure in covered lagoons or anaerobic digesters for hydrogen production should be predicated upon the management of the digestate to reduce ammonia losses. Specifically, in Section 95488.9(f)(1). Special Circumstances for Fuel Pathway Applications: *Carbon Intensities that Reflect Avoided Methane Emissions from Dairy and Swine Manure or Organic Waste Diverted from Landfill Disposal*, we recommend adding an additional requirement that the digestate from the digester from which the biomethane is captured must be treated to control ammonia emissions by using a cover or other mechanism to substantially reduce ammonia emissions.

Keeping the digestate in an enclosed system would greatly reduce the loss of ammonia from the digestate as well as allow for the capture of the residual methane in the digestate. The residual methane could be added to the digester biogas and used as fuel. An impermeable cover on the digestate reduces ammonia losses by 55-100% and residual methane emissions by 90%.<sup>4</sup> while a permeable cover is estimated to reduce ammonia by 40-80%.<sup>5</sup>

Farm systems can have a negative impact on local communities, specifically around air pollutants, odors, and other downwind ecosystem and water concerns. Producers of biomethane from digesters should have a robust system in place to participate in LCFS to ensure the digester and its nutrients are managed properly. It is critical that crediting be contingent upon meeting specific standards that further reduce environmental and community impacts.”

**Response:** Please refer to Master Responses 1 and 4. Implementation of ammonia mitigation related to new or modified facilities is under the purview of jurisdictions with local or state land use approval and/or permitting authority. New or modified facilities in California would typically qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes.

**Comment Letter 15.1-68**

2024-08-27

Christopher Lish

**15.1-68-1:** The commenter states, “Biofuels produced from virgin soy or canola oil have major negative consequences, including deforestation, and incentivizing industrial agriculture that generates large amounts of greenhouse gas and other pollution, and drives up food prices. The proposed revision acknowledges such problems, but continues to provide credits for the production of biofuels that include up to 20 percent from these destructive sources. And even this weak restraint will not take effect until 2028. Environmental justice advocates have repeatedly called instead for caps on vegetable-oil based biofuels.”

**Response:** Please refer to Master Response 2.

**15.1-68-2:** The commenter states, “The proposed draft continues to provide credits for industrial dairy “biogas,” a false solution that has infected California’s climate policies. This financial support continues to incentivize the expansion of large-scale factory dairy farms, causing serious harm to the health of surrounding communities, increasing the greenhouse gases and pollution generated by the production of feed for cows confined to barns; concentrated methane emitted by pools of waste; the inevitable leakage of methane during storage and transportation; and greenhouse gas emissions produced by combustion of the product. Incentivizing the buildout of dirty factory farms not only enables pollution but disproportionately harms low-income communities and communities of color. Factory farms, predominantly situated in these marginalized areas, inflict severe damage on air, water, public health, rural economies, and overall quality of life. Collecting methane from factory farm cesspits does nothing to alleviate the massive harm mega-dairies and other large factory farms do to these communities. I strongly urge CARB to phase out support for biomethane as rapidly as possible.”

**Response:** Please refer to Master Response 1.

**Comment Letter 15.1-83**

2024-08-27

Natural Resources Defense Council et al.

**15.1-83-1:** The commenter states, “In addition, we wish to express our deep concern with and opposition to the numerous ways that the LCFS will incentivize the conversion of municipal solid waste (MSW) into fuel, particularly MSW containing plastic. Data show that the two most common technologies used for such conversion will be pyrolysis and gasification<sup>4</sup>, both of which are regulated as incineration under federal law.<sup>5</sup> While the emissions from pyrolysis and gasification are concerning no matter what the feedstock, they are particularly toxic when the feedstocks include plastic—either directly or as a component of MSW. According to the Environmental Protection Agency’s most recent data (2018), plastics typically comprise over 12 percent of municipal solid waste.<sup>6</sup>

Pyrolysis and gasification emit hazardous air pollutants including benzene, toluene, styrene, formaldehyde, ethyl benzene, and dioxans/furans when they incinerate plastic.<sup>7</sup> Pyrolysis and gasification facilities also generate large amounts of hazardous waste; one pyrolysis facility alone generated 484,000 pounds of hazardous waste in 2019.<sup>8</sup>

Pyrolysis and gasification facilities tend to be located in communities that are disproportionately low income, people of color, or both.<sup>9</sup> If the LCFS is incentivizing the building of new pyrolysis and gasification incinerators in California (and/or elsewhere), they will most likely be sited in environmental justice communities. These communities will bear the brunt of the toxic impacts of the hazardous air pollutants and waste that is generated.”

**Response:** The Proposed Amendments are not incentivizing pyrolysis and gasification of plastics in California or elsewhere. Staff adjusted the specified source feedstocks in section 95488.8(g)(1)(A) to incentivize fuel production from the organic portion of municipal solid waste and not plastics. This comment does not raise issues related to the adequacy of the EIA and as such, no edits to the EIA are required in response to this comment. No further response is required.



**Comment Letter 15.1-85**

2024-08-27

U.S. Canola Association  
Tim Mickelson, President

**15.1-85-1:** The commenter states, “Capping canola and soy biomass-based diesel will require California to rely on more imported feedstocks such as used cooking oil (UCO) from China. There has already been a significant increase in UCO imports from China in the past year for renewable diesel in California. It is harder to guarantee or be certain of the origin of UCO or other imported feedstocks, compared to those derived in North America. For example, there is concern that some of the flood of UCO imports in the past year could include palm oil from southeast Asia, which is the subject of significant concerns due to the environmental profile of its production and the concerns over deforestation. There is no deforestation in North America from canola and soybean production and any “indirect” impacts are already accounted for in the overly conservative life-cycle analysis and carbon intensity scores that have been developed for canola and soy biofuels.”

**Response:** Please refer to Master Response 3 regarding out-of-state impacts, Master Response 2 related to land use changes, and Master Response 5 related to life-cycle emissions modeling.

**15.1-85-2:** The commenter states, “U.S. canola production has grown modestly, but steadily over the past few decades. There is potential for continued domestic expansion, including winter canola with a double crop option, in newer growing regions. Winter canola crops, grown on land that would otherwise remain fallow, provides environmental and agronomic benefits. The benefits of winter cover crops are well-documented and ways are being sought to incentivize this practice, which has a cost to farmers. As a winter crop, canola provides ground cover and promotes soil health with more living roots in the soil. This naturally increases the beneficial soil carbon cycle and decreases the need for carbon-based fertilizer and chemicals. Having viable commercial markets for winter crops offsets the cost to growers and provides renewable, plant-based feedstock for biofuels production. Double-cropping soybean with winter canola provides additional vegetable oil feedstocks on existing cropland and fallow land. However, these innovative winter and double-cropping practices will not get established with farmers if biofuel policies and markets are subject to arbitrary actions such as CARB’s proposed cap.”

**Response:** Please refer to Master Response 2. This comment does not raise issues related to the adequacy of the EIA and as such, no edits to the EIA are required in response to this comment. No further response is required.

**15.1-85-3:** The commenter states, “The CARB proposal to require pathway holders to track North American feedstocks to their point of origin and require independent feedstock certification are unnecessary. There is no evidence to suggest that deforestation or land use change is occurring in the U.S. due to land being converted to agricultural production. Increased agricultural productivity in North America is occurring through yield increases,

improved agronomic practices, double cropping and use of previously fallow land that benefits environmentally from having “cover” crops.

CARB’s proposal would further disadvantage plant-based feedstock production in the U.S. and Canada, which are regions with zero or low-risk of deforestation that are already subject to multiple compliance programs. Instead, CARB’s proposal would favor feedstocks produced in regions with a significantly higher risk of fraud or deforestation. Despite a large surge in imported waste feedstocks, CARB did not include any measures to address potential fraud in sourcing waste feedstocks. Implementing a targeted, risk-based approach to the proposal’s sustainability criteria offers several advantages. It allows CARB to prioritize resources and regulatory efforts where they are most needed, ensures that sustainability criteria are effectively applied without imposing unnecessary burdens on low-risk regions or established sustainability programs, and ensures sufficient supplies of low-carbon fuels for the California market.

Regions identified as having the lowest risks of deforestation associated with crop-based feedstocks, such as the United States and Canada, should be deemed to be in compliance with CARB’s proposed sustainability criteria. If additional measures are imposed, CARB should use an aggregate approach and utilize existing programs and data sources, such as the federal Renewable Fuel Standard (RFS) and USDA crop production data and statistics, to certify that feedstocks grown in North America that are used in the production of biomass-based diesel are produced sustainably and meet CARB’s proposed criteria.

The federal RFS already includes protections against land conversion to cropland for biofuel feedstock production. In fact, crop-based biofuels are the only energy sources subject to analysis of indirect emissions and land use change impacts. To be eligible for the RFS, feedstocks have to come from land that was non-forested and in production prior to December 19, 2007. EPA set a national baseline for eligible cropland in 2007 of 402 million acres. If cropland in subsequent years exceeds that baseline, biofuel producers would be required to track and trace where its feedstocks were grown. There is also a threshold of 397 million acres which, if exceeded, would trigger investigation and reassessment of the aggregate compliance program. Neither of these thresholds have been exceeded since 2007. We would also note that the most recent Census of Agriculture data released by USDA on February 13, 2024 shows a 2% decline of total farmland in the United States since 2017. We believe CARB could utilize the existing federal protections and monitoring of land conversion instead of imposing additional, unnecessary compliance burdens. The approach used for the RFS has proven to address sustainability concerns while limiting regulatory burden on market participants.”

**Response:** Please refer to Master Response 2. This comment does not raise issues related to the adequacy of the EIA and as such, no edits to the EIA are required in response to this comment. No further response is required.

**Comment Letter 15.1-87**

2024-08-27

Valero Renewable Fuels Company, LLC  
Michael Harrison

**15.1-87-1:** The commenter states, “The Amendments propose a modification of CARB's conservative land use change carbon intensity ("CI") values. The proposed Amendments would allow the Executive Director to further modify already conservative land use change CI values based on region. VRF has a concern surrounding the tremendous amount of discretion provided to the Executive Officer in changing established land use change CI values in a manner that circumvents the rulemaking process and excludes stakeholder input. VRF also has a concern that though CARB's indirect land use values ("ILUC" ) for corn ethanol are not consistent or appropriate. CARB is using an extremely conservative ILUC value for U.S. corn ethanol while providing a lower ILUC value for Brazilian sugarcane ethanol even though such Brazilian ethanol may be coming from potentially new deforested land.<sup>1</sup> In addition, ILUC penalties are not extended to the installation of solar arrays, wind turbines, or the extraction of minerals to support EV batteries, despite their potential for significant direct and induced land use changes. For instance, the Department of Energy projects that 10.4 million acres of solar arrays will be needed to help decarbonize the nation's power grid - as much as 83% of that acreage will likely be farmland<sup>2</sup>, which will need to be replaced. VRF urges CARB to adopt a policy that eliminates inconsistencies in its ILUC emissions calculations.”

**Response:** Please refer to Master Response 2.

**15.1-87-2:** The commenter states, “In its new round of amendments, CARB has once again failed to accurately account for the full lifecycle emissions of battery electric vehicles (BEVs). In stark comparison to CAR B's abrupt and dramatic treatment of biofuels to ensure indirect emissions with biofuels are accounted for and subjecting such fuels to a cap, CARB has turned a blind-eye to the analogous indirect emissions associated with BEV and battery production and the mining necessary for the vehicles to function. CARB should abandon this unequal treatment of fuels and vehicle technologies within the LCFS and adopt a full lifecycle emissions analysis for BEVs, including indirect emissions, consistent with CARB's treatment of biofuels and traditional fuels.”

**Response:** Please refer to Master Response 5.

**Comment Letter 15.1-91**

2024-08-27

The California Forestry Association et al.

**15.1-91-1: The commenter states, “Exclusion of Timberlands from Wildfire Risk Reduction Efforts**

While the Initial Statement of Reasons suggests that these standards are intended to reduce wildfire risk, the exclusion of large portions of timberlands where innovative solutions could be employed contradicts this objective. Timberlands, especially those prone to wildfires, present a significant opportunity for the use of biomass feedstock, which could contribute to both fire hazard reduction and low carbon fuel production.”

**Response:** The wildfire impacts associated with reasonably foreseeable compliance responses related to the LCFS Regulation are discussed in pages 138 and 139 of the Draft EIA. The changes to the LCFS Regulation have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA. Therefore, no changes to the EIA are required in response to this comment, and no further response is needed.

**15.1-91-2: The commenter states, “Conflict with the Governor’s Wildfire and Fire Resilience Task Force Goals**

Finally, the proposed amendments appear to conflict with the goals of the Governor’s Wildfire and Fire Resilience Task Force, which seeks to find ways to utilize low-value materials from timberlands to reduce wildfire threats. By excluding significant portions of timberlands, the proposed amendments undermine efforts to address the critical issue of wildfire risk through the utilization of biomass feedstocks.

In conclusion, we urge the California Air Resources Board to reconsider the proposed amendments to the Low Carbon Fuel Standards in light of these concerns. The inclusion of industrial timberlands, clearer definitions, and a more inclusive approach to feedstock sourcing will be essential to achieving the dual goals of reducing wildfire hazard and promoting sustainable low carbon fuel production. Without careful consideration and addressing of these above concerns, these regulations would severely hinder the development of the necessary innovative infrastructure that may represent the scale of outlets for forest material that contribute to wildfire hazard across the state, thereby perpetuating the cycle of extraordinarily destructive impacts from wildfire, and continually contributing to airshed impacts across the state and beyond.”

**Response:** The wildfire impacts associated with reasonably foreseeable compliance responses related to the LCFS Regulation are discussed in pages 138 and 139 of the Draft EIA. The changes to the LCFS Regulation have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA.

Therefore, no changes to the EIA are required in response to this comment, and no further response is needed.

**Comment Letter 15.1-95**

2024-08-27

Union of Concerned Scientists.

**15.1-95-1:** The commenter states, “The unprecedented speed and magnitude of the expansion of renewable diesel used in California, increasingly made from soybean oil, is harming people, accelerating tropical deforestation, and undermining California’s climate policies. We call on the California Air Resources Board (CARB) to immediately cap the use of vegetable oil–based biofuels and to strengthen safeguards within the Low Carbon Fuel Standard (LCFS) to ensure that the use of biofuels does not directly or indirectly contribute to global food price shocks, agricultural expansion, and deforestation. Capping the use of crop-based biofuels is neither radical nor unprecedented<sup>i</sup>, and is urgently required to align the LCFS with California’s focus on transportation electrification and to ensure that California remains a leader in effective and responsible climate policies.

**Response:** Please refer to Master Response 2.

**15.1-95-2:** The commenter states, “**Cropland continues to expand into sensitive ecosystems:** The expansion of soybean and palm oil (to replace soy oil used as fuel) is a major driver of tropical deforestation. Recent analysis finds that annual forest carbon loss in the tropics doubled during the early twenty-first century<sup>v</sup> and that oil palm and soybeans are, respectively, the second and third largest drivers of deforestation after cattle.<sup>vi</sup>”

**Response:** Please refer to Master Response 2.

**15.1-95-3:** The commenter states, “**Support for renewable diesel is diverting resources from transportation electrification:** Renewable diesel generated 40 percent of LCFS credits reported in the most recent quarter, and the large increase in credits from renewable diesel has depressed LCFS credit prices. Capping the use of renewable diesel and other fuels made from vegetable oil will focus more of the support provided by the LCFS on transportation electrification, which can be scaled up with clear climate benefits and without the harsh tradeoffs associated with vegetable oil and other crop-based fuels.

We therefore urge CARB to cap vegetable oil–based biofuels immediately in this rulemaking. Nothing short of a cap will effectively stem the widespread harms caused by the rapidly growing use of these fuels.”

**Response:** Please refer to Master Response 2.

**15.1-95-4:** The commenter states, “**Meaningful safeguards must effectively ensure that the use of vegetable oil or other crops for biofuels does not divert food to fuel uses or expand the footprint of agriculture.** California’s existing land-use safeguards within the LCFS rely on an estimation of land use change emissions developed using complex economic and land-use models. More than 15 years of research has not led to a consensus estimate of these emissions. A 2022 study from the National Academy of Sciences<sup>vii</sup> describes the

methodological problems arising from combining an attributional life cycle for fuel production with a consequential assessment of the climate impacts of fuel pathways or policies. A recent Model Comparison Exercise<sup>viii</sup> conducted by the US Environmental Protection Agency highlights the deep uncertainty underlying the modeled climate benefits attributed to soybean oil-based biofuels. In light of the methodological and modeling challenges with the current approach, more direct safeguards against excessive and damaging diversion of food to fuel use are required to effectively prevent bad outcomes.”

**Response:** Please refer to Master Response 2 regarding feedstock and land use changes and Master Response 5 in regard to life-cycle emissions modeling.

**Comment Letter 15.1-101a**

2024-08-27

Yale University and Princeton University

Steven Berry, David Swenson Professor of Economics

**15.1-101a-1:** The commenter states, “More generally, in this rulemaking CARB should commit to an immediate and expeditious reevaluation of the way it estimates the climate costs of using land for biofuels.. When lifecycle analyses such as those used by CARB ignore the emissions of burning biofuels, they are implicitly offsetting these emissions by the carbon removed from the atmosphere by plant growth. This is the climate benefit. But it takes land to grow these plants, and not using this land for other purposes has a climate cost. The evaluation of biofuels is largely based on the valuation of this cost of dedicating the productive capacity of land to biofuel production. Today, indirect land use change estimated by a version of the GTAP is the only way CARB assigns a climate cost to the use of land. There are several reasons this needs prompt evaluation.

First, GTAP lacks an empirical basis, and builds in structural biases that guarantee low ILUC estimates. Many of its predictions are also contradicted by substantial bodies of empirical evidence. In summary:

- GTAP does not work with physical acres but only land revenues, which leads the model to create or destroy large quantities of land. Its economic components estimate a large ILUC, but modelers artificially readjust this estimate by a “hand of God” to conserve land area, which leads to the small ILUC. This kind of readjustment is inherently invalid. If the economic components of the model are correct, then the readjusted results are incorrect. If the economic estimates are physically impossible, then the model is invalid.
- Several invalid model features make it extremely difficult for the model to convert forests. “Unmanaged” forests do not exist in the model although they are the major concern with cropland expansion. The authors also chose a forest area elasticity many times higher than the underlying study they cite, which causes forests to strongly resist conversion or immediately reappear elsewhere if converted in one location.
- Although the model has thousands of economic parameters, only a handful are based on any cited reference, none instrumented, and are then incorrectly applied to other products and in other regions. In addition, every elasticity is altered, often greatly, by a formula based on its share of a category of expenditure. That contradicts any underlying estimates, which are not based on expenditure shares. It also leads to bizarre results. For example, biofuels for fuel somehow lead to price decreases for electricity, which somehow lead to less electricity consumption.
- Without empirical basis, the model is programmed to prevent international land use change, which is where agricultural expansion occurs. It does so by using arbitrary assumptions to constrain trade in agricultural products. The resulting predictions are provably wrong because this leads the model to predict large price differences for crops



in different parts of the world, which do not occur in reality. Because global prices of grains and vegetable oils are highly linked, changes in demand will have global effects leading to heavy cropland expansion in the Tropics, where it is cheapest.”

**Response:** Please refer to Master Response 2 regarding feedstock and land use changes and Master Response 5 in regard to life-cycle emissions modeling.

**15.1-101a-2:** The commenter states, “Second, as also discussed in the attached paper, the ILUC estimates generated by GTAP are only around 10% of the average carbon losses from vegetation and soils that have occurred to generate the cropland used to produce the quantity of corn used in corn ethanol or the quantities of vegetable oil used in any form of biodiesel or renewable diesel.(Timothy D. Searchinger et al. 2018). (These calculations adjust generously for by-products and co-products.) In other words, if the additional corn or vegetable oil used for biofuels is replaced on the average type of land used to generate these products globally and at the average global yields, the land use emissions will be roughly ten times the ILUC estimates used by CARB. If the ILUC emissions are even around 20% of this average, the emissions reductions estimated by CARB will disappear. In the absence of compelling economic evidence that the sources of supply will be overwhelmingly lower than the global average land use source to the present date, these biofuels cannot credibly be viewed to lower emissions.”

**Response:** Please refer to Master Response 2.

**15.1-101a-3:** The commenter states, “Third, even if the GTAP model were correct, the resulting policy is morally indefensible. As revealed even in the publication by the GTAP authors (Hertel et al. 2010), but also shown separately in (T.D. Searchinger et al. 2015), the ILUC number for ethanol is much lower because GTAP estimates much of the food diverted to biofuels is not replaced due to higher crop prices. As shown in the latter paper, the literal physical source of the emissions reduction is people and livestock around the world eat less carbon and therefore emit less carbon dioxide in their respiration. Global food prices primarily affect consumption by the global poor. California’s implicit policy, by using GTAP, is therefore to obtain greenhouse gas reductions by increasing global food prices so that the global poor consumed less. This is an indefensible position.”

**Response:** Please refer to Master Response 2.

**15.1-101a-4:** The commenter states, “Finally, the use of economic models to estimate ILUC does not actually estimate the true climate costs of devoting land to biofuels. In effect, the ILUC estimate seeks to ask what are the climate effects if California enacts expensive policies to make greater use of land for biofuels but there are no policies in the world to use land to achieve climate benefits in any other way. The true costs reflect the lost opportunity to use land in other ways to benefit the climate. These are the opportunity costs, and in economic terms, opportunity costs are costs, and that principle applies equally to climate effects as money or use of any other asset.

Land is an extremely valuable asset, with fixed global quantity, for the climate. The world needs both more food and more carbon storage. The proper measure in evaluating the costs of diverting land from food production is the quantity of carbon that could reasonably be saved by continuing that food production. And even if that food production were treated as surplus, the appropriate measure would be the quantity of carbon that could be removed from the atmosphere by reforesting “surplus” cropland. As discussed in the GTAP paper and in (T. D. Searchinger, Beringer, and Strong 2017), these alternative uses of land are vastly more valuable than using land for biofuels, even cellulosic biofuels. The best uses of U.S. corn land for climate purposes are to produce corn, but even if they were established in forest, they would reduce carbon for decades far more than biofuels. And the world faces challenges even of siting solar power. On three quarters of the world’s land, solar power will generate more than 100 times the useable energy, and when used to transport cars in electric engines, will generate more than 300 times the motion. On low productivity land, the ratio extends into the thousands. Overall, the world has no substitute for the use of well-watered land for food, forests and other carbon-rich native habitats. But the world has far more efficient alternatives for the generation of energy.

The academic literature has been moving broadly to recognize that the climate uses of land must be evaluated using some form of opportunity cost (see list in Appendix A). CARB should do so as well. And once it does so, it will conclude that the dedication of the productive capacity of land to produce biofuels is a poor use of land and has adverse effects on the climate.”

**Response:** Please refer to Master Response 2. It should be noted that per CEQA Guidelines Section 15064 (e) ‘Economic and social changes resulting from a project shall not be treated as significant effects on the environment’.

**Comment Letter 15.1-106**

2024-08-27

Generate Capital

Asher Goldman, Vice President

**15.1-106-1:** The commenter states, “Impact of Removing Fossil Jet Fuel as a Deficit Generator”

The decision to remove fossil jet fuel as a deficit generator within the LCFS program is a major concern, as it puts a significant source of transportation emissions outside of this program and would fail to force polluters to account for the cost of those emissions. Fossil jet fuel was expected to generate tens of millions of deficits over the next 20 years, playing a critical role in incentivizing the adoption of sustainable aviation fuels (SAFs) and other low-carbon alternatives. By removing this fuel class from the deficit generation framework, CARB would weaken the economic incentives for the aviation industry to transition to cleaner fuels, thus slowing progress toward the state’s broader climate goals.

The rationale behind this decision appears to overlook the importance of LCFS in pricing carbon emissions effectively. In the documentation published on August 12, CARB stated “[p]ublic commenters noted that the original proposal did not guarantee that airlines would procure and use alternative jet fuel”. The LCFS program’s strength lies in its ability to internalize the cost of carbon emissions, making high-carbon fuels less competitive and low-carbon alternatives more. We only have to look at the last five years of the diesel pool to see this in action: a low-CI diesel mandate or a cap on fossil diesel would not have resulted in nearly as much fossil diesel reduction as the price signals from the LCFS program effectuated by incentivizing the private sector to invest in new production capacity for fossil diesel alternatives. By removing fossil jet fuel as a deficit generator, CARB risks diluting this crucial price signal – both through the elimination of the cost on fossil jet fuel use and through the reduced benefit to SAF as a result of a lower LCFS price – which would hinder the adoption of SAF and delay the decarbonization of the aviation sector.

We strongly urge CARB to reconsider this decision and to explore ways in which the LCFS program can continue to drive emissions reductions in the aviation sector. A more integrated approach, where the LCFS framework works alongside an aviation sector GHG reduction mandate, would provide the strongest incentives for the industry to reduce its carbon footprint.”

**Response:** This comment expresses an opinion about the removal of jet fuel from the updated LCFS Regulation. The potential air quality and GHG emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. All other resources areas are adequately analyzed under the Draft EIR. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment.

**Comment Letter 15.1-115**

2024-08-27

Iowa Biodiesel Board

Grant Kimberley, Executive Director

**15.1-115-1:** The commenter states, “Placing an artificial limit on the market, combined with the inclusion of sustainability guardrails, as proposed will fail to reduce emissions and will only increase costs. Iowa biodiesel producers and farmers remain frustrated that CARB insists on using data and methods that are over two decades old to set carbon intensity (CI) scores for soy, while refusing to consider new economic data and failing to consider the potential indirect emission impacts their expanding preference for waste is having.”

**Response:** Please refer to Master Response 2.

**15.1-115-2:** The commenter states, “As CARB seeks to finalize updates to the LCFS program in the coming months, we strongly encourage the agency to ensure these updates are based on science as required by AB-32. The determination to make such drastic changes to previous CARB proposals so late in the game was shocking to the soybean and biofuels industries. For CARB to move from arguing that, based on the modeling, a vegetable oil feedstock cap was detrimental to the goals of the LCFS at the April public workshop, to now recommending a wildly stringent cap on those feedstocks without data or science, is quite difficult to comprehend. CARB’s own April 10th analysis showed that a feedstock cap would increase greenhouse gas (GHG) emissions in California, which is contrary to requirements in AB-32.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-123**

2024-08-27

Orran Balagopalan

Leadership Counsel for Justice and Accountability

**15.1-123-1:** The commenter states, “These impacts were not adequately evaluated, or even acknowledged, in the Draft Environmental Impact Analysis (“DEIA”). The additional modifications to the proposed amendments published on August 12, 2024 do not eliminate, and would likely increase, the incentive for factory farms to expand their herds and install anaerobic digesters.”

**Response:** Please refer to Master Response 1.

**15.1-123-2:** The commenter states, “Leadership Counsel intends to provide more comprehensive comments on the inadequate Recirculated Draft Environmental Impact Analysis ahead of the September 30, 2024 public comment deadline. However, as discussed below, Leadership Counsel notes that the modifications do not address its concerns regarding the incentives for factory farms created by the LCFS.”

**Response:** Please refer to Master Response 1.

**Comment Letter 15.1-138**

2024-08-27

Iowa Renewable Fuels Association  
Monte Shaw, Executive Director

**15.1-138-1:** The commenter states, “The inclusion of a virgin vegetable oil feedstock cap in the 15-Day Changes was alarming to farmers and the entire biofuels value chain, as reflected in market activity. You may understand our surprise based on the April 10 workshop in which CARB noted that liquid fuels would continue to be needed in the transportation sector in California for at least the next decade. In that same workshop, CARB also argued that the imposition of a virgin vegetable oil feedstock cap would increase the utilization of petroleum diesel in the transportation sector. In the staff’s own presentation on April 10, staff noted that nearly eighty percent of vehicles on the road in California to still use combustion engines by 2030. Further, they noted that such a stringent cap on virgin vegetable oils may result in 2.8 billion gallons of fossil diesel utilization in 2030, versus 1.9 billion gallons using a scenario that does not impose the cap proposed by the Environmental Justice Advisory Committee.

In a full reversal of staff’s prior analysis, which is only four months ago, staff is now essentially recommending to the board that more fossil diesel be sold into the market in 2030. This recommendation appears to not only go against the goals of AB-32, but also science. This recommendation seems to flatly disagree with the Intergovernmental Panel on Climate Change, which notes in its sixth assessment report that using existing low carbon technologies is a crucial component to avoiding catastrophic temperature increases, stating that “biodiesel and renewable diesel fuels...could offer important near-term reductions” for several technologies, including buses, rail, and long-haul trucking.<sup>1</sup>”

**Response:** This comment expresses an opinion on the feedstock crediting limit included in the updated LCFS Regulation presented in the 15-day changes. Please refer to Master Response 2. While the comment does not raise issues related to the adequacy of the EIA, impacts related to the feedstock crediting limit under the Proposed Amendments was evaluated within the Recirculated EIA. As this comment does not raise issues related to the adequacy of the EIA, no edits to the EIA are required in response to this comment. No further response is required.

**Comment Letter 15.1-153**

2024-08-27

POET

Joshua P. Wilson, Senior Regulatory Counsel

**15.1-153-1:** The commenter states, “CARB should also revise its proposed CA-GREET 4.0 model to include scientific advancements embodied in the latest version of Argonne National Laboratory’s GREET Model, and to modify elements of the model that inadequately capture emissions in the biofuel lifecycle.”

**Response:** Please refer to Master Response 5.

**15.1-153-2:** The commenter states, “Finally, CARB’s Standardized Regulatory Impact Assessment<sup>8</sup> and Environmental Impact Analysis<sup>9</sup> do not address the sustainability requirements and potential costs associated with requiring certification.”

**Response:** The EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments’ potentially significant physical impacts on the environment. As such, comments related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, these comments are acknowledged for the record and have been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-153-3:** The commenter states, “CARB issued a revised Environmental Impact Analysis (“Revised EIA”) as part of the Revised Proposed Amendments.<sup>44</sup> However, this Revised EIA does not address impacts associated with the sustainability requirements. CARB must analyze these impacts. Complying with sustainability certification requirements would impose a significant cost on biofuel producers, as described in POET’s prior comment letter. Based on POET’s experience with ISCC Plus and ISCC EU, farmers require significant premiums to comply with sustainability requirements. If biofuel producers provide a premium to farmers to comply with sustainability criteria without receiving CI benefits from emissions reductions associated with sustainable farming practices, this cost will likely be passed down to the consumer resulting in increased gasoline prices. Alternatively, the added costs would lead to an increase in ethanol price, which could decrease the amount of ethanol used in California. This would in turn increase particulate matter and other forms of pollution in the state, as detailed in POET’s prior letter. The Revised EIA does not attempt to address any of these issues, meaning that it continues to be fundamentally flawed.”

**Response:** The EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments’ potentially significant physical impacts on the environment. As such, the parts of this comment related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments

document. However, these comments are acknowledged for the record and have been reviewed by CARB staff prior to returning to the Board for final consideration.

Commenter suggests increased costs would lead to an increase in ethanol prices, decreasing the amount of ethanol used in California and increasing particulate matter and other forms of pollution. This argument is speculative. No further response is required.

**15.1-153-4:** The commenter states, “CARB did revise the value assigned to ethanol if it fails to meet the sustainability requirements. In the Revised Proposed Amendments, ethanol would receive the CARBOB (100.60) value instead of the ULSD value (105.76) if it fails to meet the certification requirements.<sup>45</sup> This modification does not impact the inadequacy of the EIA, because ethanol would still be given a high penalty that is not reflective of the fuel’s actual CI score and could result in less ethanol sold into California and blended into California gasoline. As a result, emissions of criteria and toxic air pollutants in California could still increase, and the EIA must address this potential outcome.”

**Response:** Please refer to Master Response 2 regarding the proposed sustainability requirements, Master Response 3 regarding out-of-state impacts, and Master Response 4 regarding air pollution.



**Comment Letter 15.1-154**

2024-08-27

Advanced Biofuels Association

Michael McAdams, President

**15.1-154-1:** The commenter states, “The proposal also fails to comply with CEQA requirements in it’s Environmental Impact Analysis which is silent on the potential impacts of the 20% cap.”

**Response:** CARB released the Recirculated EIA on August 16, 2024, which included the changes included in the 15-day package. As the 20 percent credit limit on biofuels derived from soybean and canola oils were included in those changes they were also included in the analysis of the Recirculated EIA as required by CEQA. Please also refer to Master Response 2.

**15.1-154-2:** The commenter states, “Additionally, under AB32, CARB cannot undertake regulatory activities that interfere with air quality, but modeling suggests that limiting biomass based diesel may do just that. Finally, the proposed rule exceeds CARB’s authority by stepping beyond it’s role in setting “technology neutral” standards to reduce the carbon intensity of California’s transportation fuels.”

**Response:** Please refer to Master Responses 2 and 4.

**15.1-154-3:** The commenter states, “The 20% credit cap on certain biofuels in the 15-Day Changes and the accompanying Recirculated Draft EIA fail to comply with CEQA. Nowhere does the Recirculated Draft EIA discuss or consider the potential environmental impacts of capping LCFS credits for certain types of BBD. For example, the language in the Draft EIA and the Recirculated Draft EIA is nearly identical with respect to potential land use changes associated with the Proposed Amendments. Without any additional analysis, CARB concludes that “given that volumes in excess of 20 percent . . . will not be eligible for crediting,” “the proposed regulation is not expected to result in significant increases in soy and canola feedstock utilization for biomass-based diesel.”<sup>11</sup>”

**Response:** Please refer to Master Response 2.

**15.1-154-4:** The commenter states, “Notably absent is any consideration of the potentially detrimental environmental impacts of excluding substantial volumes of BBD, including the negative impacts for greenhouse gas (GHG) emissions and other pollutants. It is not clear that CARB has carefully analyze which fuels will increase as a result of these new restrictions and what emissions impacts could be expected across criteria pollutants as well as GHGs. CEQA necessitates evaluation of such potentially consequential adverse environmental impacts of the BBD cap.”

**Response:** Please refer to Master Responses 2 and 4.

**15.1-154-5:** The commenter states, “, “In addition, the Recirculated Draft EIA does not square the proposed cap with the fact that CARB’s own analysis shows that the likelihood that increased demands on biofuel crops could contribute to direct and indirect land use change “is at least partially (and potentially fully) accounted for by the LUC scores added to crop-derived pathways.”<sup>12</sup> If that is indeed the case, it is unclear what purpose the BBD cap serves.”

**Response:** Please refer to Master Response 2.

**15.1-154-6:** The commenter states, “Under AB32, CARB cannot undertake regulatory activities to reduce GHG emissions that interfere with “efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions.”<sup>13</sup> The BBD limit is contrary to AB32 in that it could drive increased use of fossil fuels in lieu of renewable fuels with more beneficial air quality emissions profiles.”

**Response:** Please refer to Master Responses 2 and 4.

**15.1-154-7:** The commenter states, “In sum, the 20% cap is inconsistent with CARB’s mandate to protect air quality while achieving cost-effective GHG emissions reductions. We encourage CARB to thoroughly evaluate the air quality impacts of such a drastic change to the LCFS program as required by Section 38562(b)(4) of the California Health and Safety Code.”

**Response:** Please refer to Master Response 2 relating to the 20 percent cap and Master Responses 4 and 5 regarding GHG emissions.

**Comment Letter 15.1-155**

2024-08-27

Par Pacific Holdings, Inc.

**15.1-155-1:** The commenter states, “1. The 20% cap on credits for BBD from soy and canola feedstocks is unnecessary and will result in higher GHG emissions and tailpipe emissions for Californians, especially those in disadvantaged communities.”

**Response:** Please refer to Master Response 2 relating to the soy and canola feedstock provision and Master Response 4 regarding GHG emissions.

**Comment Letter 15.1-172**

2024-08-27

Union of Concerned Scientists

**15.1-172-1:** The commenter states, “We applaud CARB for acknowledging the harm caused by diverting food to fuel. We are resubmitting a letter which has now been signed by more than 50 experts in food markets, deforestation and energy policy calling on CARB “to immediately cap the use of vegetable oil–based biofuels and to strengthen safeguards within the Low Carbon Fuel Standard (LCFS) to ensure that the use of biofuels does not directly or indirectly contribute to global food price shocks, agricultural expansion, and deforestation.” A recent report from the US Department of Agriculture’s Foreign Agriculture Service highlights what is at stake, finding that *“the United States is rapidly expanding imports of animal fats and vegetable oils to both use as feedstocks for renewable diesel production and to backfill other feedstocks, like soybean oil, that have been diverted to renewable diesel production.”*<sup>3</sup> Because of the renewable diesel boom, *“the United States became a net soybean oil importer for the first time in 2023.”* The report also concludes that *“the real driver for renewable diesel expansion has been the California Low-Carbon Fuel Standard.”*

While the proposal takes a step in this direction, it must be strengthened to effectively prevent food versus fuel conflicts and deforestation.

For reasons we explained in our earlier comments and our 2022 briefing paper<sup>4</sup> a policy change that only limits the share of soy and canola oil feedstock is a poor substitute for a cap on all lipid biofuel feedstocks based on sustainable availability. Even with limits on the share of vegetable oil used for bio-based diesel, California will continue to draw vastly more than its share from global lipid markets, importing used cooking oil and animal fat from around the world. The consequence is that California’s LCFS policy can’t be replicated by other states or countries. There simply isn’t enough used cooking oil to go around, and capping one set of feedstocks with no limit on others can lead to counterproductive feedstock and fuel shuffling and carbon leakage. A more systematic and effective approach would cap all feedstocks based on a reasonable share of what is sustainably available, and implement this limit on obligated parties or the market as a whole, rather than individual fuel producers. While this approach might be more work to implement, it would yield a more stable and replicable policy over the long term. However, to focus on our comments on the 15-day changes we suggest ways the proposed mechanism could be strengthened within the general parameters proposed.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-177**

2024-08-27

Coalition for Clean Air

Bill Magavern, Policy Director

**15.1-177-1:** The commenter states, “**Further limit crediting of crop-based biofuels.** CARB should establish additional guardrails to prevent incentivizing conversion of crop lands to fuel production, which exacerbates already-existing food shortages in much of the world. While biofuels made from wastes can provide a net climate benefit, using productive land to produce fuel is detrimental to the climate, because carbon-absorbing natural land elsewhere will be converted into crop production.”

**Response:** Please refer to Master Response 2.

**15.1-177-2:** The commenter states, “**Regulate methane emissions from large dairies.** This issue is not included within the four corners of the LCFS rulemaking but is related. Dairies are the largest California source of methane, a potent short-lived climate pollutant. CARB should require the large dairies to reduce their emissions of both manure and enteric methane. The regulations should also strive to protect local communities from the adverse impacts of large-scale dairy production.”

**Response:** Please refer to Master Response 1.

**Comment Letter 15.1-190**

2024-08-27

Clean Air Task Force

Ashley Arax, Senior California Policy Manager

**15.1-190-1:** The commenter states, “Additionally, if the proposed limit on vegetable oil feedstocks were extended to alternative jet fuel, it would help minimize the unintended indirect land use change consequences from including aviation fuel in the LCFS.”

**Response:** The potential air quality and GHG emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. All other resources areas are adequately analyzed under the Draft EIR. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment.

**15.1-190-2:** The commenter states, “CATF supports incorporating prudent and firm limits on fuels made from vegetable oils. As we have commented previously,<sup>7,8</sup> the use of vegetable oil feedstocks poses significant indirect land use change risks because of substitution effects in global markets that often result in deforestation and/or expanded palm oil production.”

**Response:** Please refer to Master Response 2 regarding land use changes and deforestation.

**15.1-190-3:** The commenter states, “Similarly, limiting the credit cap to only soy and canola oil feedstocks would enable fuel producers to shift to alternative crop seed oil pathways, with potential market substitution effects and a net increase in deforestation and/or palm oil production.”

**Response:** Please refer to Master Response 2.

**15.1-190-4:** The commenter states, “Because a percentage-based limit on credit generation will continue to allow growth in the use of crop oil-based fuels and because of the potential for wide-spread substitution effects of using bio-oil feedstocks to make fuels, the risk of indirect impacts on food markets, land use change and associated emissions will remain.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-192**

2024-08-27

RMI

Jane Sadler, Senior Associate, Clean Industrial Policy

**15.1-192-1:** The commenter states, “• Local air quality and environmental justice concerns when trading gas attributes across significant distances

- For instance, if a dairy digester in the Midwest can transfer its emissions attributes to a blue hydrogen facility in California, it is the communities in California that will be adversely impacted by the combustion and fossil-gas hydrogen production taking place. And the reverse is also true –communities in the Midwest must suffer the air pollution and health hazards of largescale dairy digesters maintaining economic viability due to sales of environmental attributes without the local economic or decarbonization benefits of producing and using hydrogen nearby.”

**Response:** Please refer to Master Response 3 regarding out-of-state impacts and Master Response 4 regarding air and water quality impacts. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**15.1-192-2:** The commenter states, “Currently, LCFS calculates the carbon intensity (CI) of dairy biomethane between -102.79 and -790.41 grams of carbon dioxide emissions per megajoule (gCO<sub>2</sub>e/MJ), with an average of -269 gCO<sub>2</sub>/MJ. When dairy farmers across the county use anaerobic digesters to capture their biomethane and inject it into natural gas pipelines, these intensely negative scores allow them to generate tradeable LCFS credits. These credits can then be used to offset the emissions of things like hydrogen production that uses fossil fuels as a feedstock. As a result, dairy biomethane contributed almost 20% of the credits in the LCFS program according to recent LCFS data yet provided less than 1% of energy used for transportation under the program.

The reason for these negative CI scores is the assumption that dairy biomethane would have been vented into the atmosphere otherwise. This is despite the fact that for many sources, methane generation could have been avoided in the first place through alternative practices – such as organic waste diversion from landfills or alternative manure management – and would likely have been captured and put to another productive use regardless. Furthermore despite the negative scores that biomethane receives under current LCFS rules, the real emissions from biomethane use are not negative. Dairy biogas burned in natural gas pipelines still releases emissions upon use, and traditional LCAs often exclude the impact of potent fugitive emissions from the carbon intensity score of dairy biogas.

The true emissions intensity of biogas and biomethane sources is very dependent on fugitive methane, which when released into the atmosphere has roughly 80 times the near-term

warming power of carbon dioxide. As EPA acknowledges in its RNG Operations Guide, “fugitive emissions of methane, depending upon their magnitude, can negate the climate and environmental benefits of RNG projects.” The IPCC also references multiple studies (Scheutz and Fredenslund 2019; Bakkaloglu et al. 2021) that show how fugitive emissions can make biogas production emission intensive.

Furthermore, the gray and black hydrogen producers that purchase credits from dairy biomethane producers in order to qualify under LCFS also heavily emit CO<sub>2</sub>—but via current LCFS crediting math this whole process is considered ‘zero emission’.

**Response:** Please refer to Master Response 1 and Master Response 5.

**15.1-192-3:** The commenter states, “Additionally, there should be feedstock eligibility requirements in place to ensure this program doesn't perversely lead to additional waste/methane generation by expanding operations. Qualifying sites should be required to monitor for fugitive emissions and demonstrate they are collecting methane and co-pollutants at the source to the maximum extent possible.”

**Response:** Please refer to Master Response 1 regarding increases in livestock production and methane crediting and response to comment 299-18 regarding feedstock limitations as a proposed mitigation measure.



**Comment Letter 15.1-193**

2024-08-27

North Dakota Soybean Processors

Bill McBee, NDSP Commercial Manager

**15.1-193-1:** The commenter states, “NDSP strongly encourages CARB to follow its own modeling and conclusions CARB presented in its workshop on April 10, 2024, which show that an artificial cap on vegetable oil feedstocks is unwarranted and would only increase fuel prices and harm air quality. With the implementation of a cap on biomass-based diesel (BBD) feedstocks, a phaseout of BBD pathways, and even more restrictive and costly traceability and verification system, this proposal will only lead to more combustion of fossil diesel fuel, higher fuel prices at the pump, and poorer air quality.”

**Response:** Please refer to Master Response 2. The EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments’ potentially significant physical impacts on the environment. As such, comments related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, these comments are acknowledged for the record and have been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-193-2:** The commenter states, “By capping vegetable oil usage, the proposal risks stalling the progress made to reduce carbon emissions by creating a bottleneck in renewable diesel production. In fact, CARB’s own analysis supports this assessment.

NDSP strongly supports CARB’s findings presented at the April 2024 workshop that renewable diesel and biodiesel have a positive impact on both consumers and the environment. CARB’s “Staff Report: Initial Statement of Reasons” (ISOR) specifically modeled an alternative (Alternative 1) which “includes several policy mechanisms that have the effect on limiting the number of credits created from existing low-CI pathways” including “a limit on total credits from diesel fuels or sustainable aviation fuel produced from virgin oil feedstocks.” The report’s impacts are glaring – and each of them are attributed to more fossil diesel use in lieu of renewable diesel:

- **Increased Fuel Costs:** Alternative 1 had total costs of \$162 billion, 1 percent more than the scenario without a vegetable oil cap and similar policies. According to CARB, “The main reason is that diesel fuel is a larger part of the fuel mixture and continues generating large amounts of in-state deficits through 2046. This is because renewable diesel produced from virgin oil feedstock is phased out...and more fossil diesel is needed to fuel the remaining vehicles with internal combustion engines.”
- **Increased Emissions:** Alternative 1 had greater emissions of greenhouse gases, particulate matter (PM2.5) and nitrous oxide (NOx) than the baseline. The higher NOx and PM2.5 emissions in particular were attributed specifically to reduced renewable

diesel—CARB found that “Alternative 1 increases NOx emissions by an additional 10,981 tons and increases PM2.5 emissions by 2,773 tons. Alternative 1 has more NOx and PM2.5 emissions than the proposed amendments because this scenario uses less renewable diesel than the proposed amendments.”

- **Fewer Health Benefits:** In line with its higher emissions, Alternative 1 also had correspondingly lower health benefits. CARB found that “Alternative 1 has a valuation of health benefits at \$1.58 billion compared to the proposed amendments with a valuation of \$4.98 billion, a difference of \$3.4 billion less in health benefits. The lower avoided health impacts of Alternative 1 are primarily associated with increases in PM2.5 over the baseline due to lower utilization of renewable diesel.”

CARB Staff justifiably rejected Alternative 1, citing the fact that it “relies more heavily on fossil fuels...than the proposed amendments. As a result, [Alternative 1] does not achieve the same level of NOx and PM2.5 emissions reductions as the proposed amendments and potentially exacerbates existing air quality challenges in the State.”

Additionally, the ISOR included an analysis, and the rejection, of another proposal by CARB’s Environmental Justice Advisory Committee which included a cap on vegetable oils set at 2020 levels. CARB found that “due to limitations on lipid biofuels and dairy biogas, the Comprehensive EJ Scenario results in higher volumes of fossil diesel being used than any of the other scenarios evaluated.” However, despite the demonstrated negative economic and health impacts of a vegetable oil cap, CARB’s 15-Day Changes seek to accelerate those adverse impacts through additional regulatory requirements and market limitations on crop-based feedstocks. The additional restrictions will effectively create a decreasing volumetric cap as the price of compliance to maintain market access becomes cost prohibitive.

CARB’s analysis therefore appears to be at odds with its own prior findings. The ISOR concludes that just the imposition of a cap on vegetable oil feedstocks will increase fossil diesel use. Yet, CARB’s proposal summary states that “this [vegetable oil cap] allows for California to displace up to 100 percent of the State’s fossil diesel demand with cleaner alternative diesel.” This will not be possible with the combined establishment of a cap on feedstocks, a phaseout of new BBD pathways, and the imposition of even more costly traceability and verification measures. CARB has not explained why it is rejecting or ignoring its prior conclusions in the ISOR.”

**Response:** Please refer to Master Response 2 regarding the soy/canola/sunflower oil provision and Master Response 5 regarding life-cycle emissions modeling. Additionally, the EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments’ potentially significant physical impacts on the environment. As such, comments related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, these comments are acknowledged for the record and have been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-193-3:** The commenter states, “NDSP urges CARB to eliminate the proposal’s cap on vegetable oil feedstocks. In its place, we continue to recommend implementing policies that encourage the responsible production and use of renewable feedstocks while addressing concerns about deforestation through targeted risk-based measures.”

**Response:** Please refer to Master Response 2.

**15.1-193-4:** The commenter states, “But by minimizing RD and biodiesel production through a vegetable oil cap and related proposals, CARB would reduce environmental co-benefits and harm air quality. Because RD achieves significant NOx and PM2.5 reductions relative to fossil diesel, a cap that artificially reduces RD in the market will reduce the environmental benefits of the LCFS. As discussed above, that is borne out by CARB’s own modeling in its ISOR.”

**Response:** Please refer to Master Response 2.

**15.1-193-5:** The commenter states, “NDSP appreciates CARB’s continued recognition that some geographic regions carry a higher risk for deforestation. However, the proposal doubles down on a one-size-fits-all approach which, according to CARB’s Recirculated Draft Environmental Impact Analysis (EIA), would “create an even stronger incentive to utilize waste feedstocks,” without any additional analysis of direct or market-mediated effects from such a policy, nor any additional proposed compliance requirements to ensure waste feedstocks are not fraudulent.

Moreover, CARB’s proposal would further disadvantage regions of crop-based feedstock production with low-risk of deforestation (U.S. and Canada) that are already subject to multiple compliance programs, thereby favoring feedstocks produced in regions with a significantly higher risk of fraud or deforestation.

At CARB’s April workshop, staff noted additional measures which were under consideration to address potential fraud in sourcing waste feedstocks, including “additional detailed traceability, verification and/or enforcement of waste feedstocks to avoid fraud.” Yet, despite additional proposals that would accelerate waste feedstock demand, the 15-Day Changes inexplicably included none of those measures.”

**Response:** Please refer to Master Response 2 regarding deforestation and feedstocks and Master Response 3 regarding out-of-state impacts. Additionally, the EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments’ potentially significant physical impacts on the environment. As such, comments related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, these comments are acknowledged for the record and have been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-193-6:** The commenter states, “NDSP encourages CARB to not outsource sustainability certifications to the European Commission. CARB should recognize U.S. national, state, industry programs that meet the same intended goal of stopping deforestation and conversion. It is critical that CARB provide a tiered approach to feedstocks, fuels, and regions based on risk.

Regions identified as having the lowest risks of deforestation associated with crop-based feedstocks, such as the United States and Canada, crop-based feedstocks should be deemed to be in compliance with CARB's proposed sustainability criteria.

In the event CARB is unwilling to deem U.S. and Canadian feedstocks compliant, for regions where crop-based feedstocks comply with another established sustainability system, such as the Renewable Fuel Standard (RFS) Canada's Clean Fuel Regulation (CFR), or energy tax credit provisions in the Inflation Reduction Act (IRA), CARB should permit some level of aggregate compliance. These programs offer established frameworks for verifying sustainable practices and are a practical and effective way to achieve CARB's environmental goals without sacrificing any sustainability gains.”

**Response:** Please refer to Master Response 2 regarding deforestation and feedstocks and Master Response 3 regarding out-of-state impacts. Additionally, the EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments' potentially significant physical impacts on the environment. As such, comments related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, these comments are acknowledged for the record and have been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-193-7:** The commenter states, “In most instances the waste feedstock lifecycle begins when it is deemed “waste,” however key factors are not considered such as was that waste initially from a product that was grown on deforested land, for example. NDSP notes that the environmental impacts of a product's entire life cycle for waste feedstocks should be considered.”

**Response:** Please refer to Master Response 2 regarding feedstocks and Master Response 5 regarding lifecycle emissions modeling.

**15.1-193-8:** The commenter states, “In conclusion, CARB analysis, market and scientific data collectively demonstrate that consideration of a cap or limitation on crop-based feedstocks is unwarranted and in fact contradict AB 32, the LCFS regulations, and other California laws. Further, doing so unexpectedly and contrary to the reasonable expectations of regulated parties would undercut the necessary investments that are being made to support low carbon feedstocks and further feedstock expansion.

NDSP also continues to encourage CARB to adopt a targeted, risk-based approach to implementing sustainability criteria under the LCFS. By accurately assessing deforestation risk, leveraging existing sustainability frameworks, and implementing targeted measures for high-risk regions, CARB can achieve its environmental objectives while also supporting a sustainable and resilient biofuels industry.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-194**

2024-08-27

Ag Processing Inc

Chris Schaffer, Chief Executive Officer and General Manager

**15.1-194-1:** The commenter states, “We urge CARB to base its decisions on up-to-date scientific evidence and to ensure alignment with the requirements of AB-32. The shift from opposing a feedstock cap to recommending one without clear justification appears inconsistent with both scientific consensus and the goals of AB-32. This inconsistency may lead to increased greenhouse gas emissions (GHGs) and unintended market distortions.”

**Response:** Please refer to Master Response 2.

**15.1-194-2:** The commenter states, “This cap could therefore disadvantage these producers, leading to higher fuel prices, poorer air quality, and an increased reliance on less sustainable feedstocks.”

**Response:** Please refer to Master Response 2 regarding the soy/canola/sunflower oil provision, and Master Response 4 regarding air quality impacts. The EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments’ potentially significant physical impacts on the environment. As such, comments related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, these comments are acknowledged for the record and have been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-194-3:** The commenter states, “The proposed cap could inadvertently promote greater fossil fuel use and undermine the progress achieved in reducing carbon emissions and other pollutants through biomass-based fuels such as biodiesel and renewable diesel.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-195**

2024-08-27

Life Cycle Associates

**15.1-195-1:** The commenter states, “In summary, the predominant precedent for biofuel policy is to model biogenic carbon based on a carbon neutral approach. The diversity of approaches to biogenic carbon accounting and lack of scientific consensus represents a challenge for incorporating such feedstocks into LCFS programs. The LCFS programs that do include biomass feedstocks assume carbon neutrality, either implicitly by ignoring biogenic carbon, or explicitly by accounting for offsetting biogenic carbon uptake and emissions. The carbon neutral approach, however, may not be appropriate for all biomass feedstocks, particularly those with longer growth cycles.

To date, CARB has not formally identified an approach to quantifying emissions associated with certain types of biomass residues, including those from wood and nutshells (Figure 3.15). The lack of such transparent guidance impinges the ability to plan and execute biofuel projects that can deliver alternative biomass residue fates for hard-to-decarbonize sectors such as sustainable aviation fuel. As a result, these types of biomass residues may continue to emit GHG emissions associated with business-as-usual conventional fates, e.g., burning and decomposition, as uncertainty of their treatment in the LCFS increases perceived investor risk.”

**Response:** Please refer to Master Response 5 regarding biogenic fuels.

**15.1-195-2:** The commenter states, “Although wildfire is not considered in the LCFS, it is considered an alternative fate in this analysis as it displaces wood combustion. To assess the GHG emission reductions associated with biofuel production in comparison to combustion of woody biomass during wildfires, emission factors were established based on a literature review (see Table 22).”

**Response:** The wildfire impacts associated with reasonably foreseeable compliance responses related to the Proposed Amendments are addressed adequately in pages 138 and 139 of the Draft EIA. The changes to the Proposed Amendments have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA. Therefore, no changes to the EIA are required in response to this comment, and no further response is needed.

**Comment Letter 15.1-196**

2024-08-27

Be8energy

Ricardo Franzen Reckziegel, Commercial Director

**15.1-196-1:** The commenter states, “We were surprised by the inclusion of the 20% cap on credit generation for BBD produced from soy and canola. As CARB made clear in its April 10th LCFS workshop (the “Workshop”) such a cap will likely result in fossil diesel replacing renewable diesel and biodiesel in the California fuel pool, causing deleterious health effects for Californians living in disadvantaged communities near heavy-duty trucking corridors. We also believe the cap is unnecessary.”

**Response:** Please refer to Master Response 2. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.



**Comment Letter 15.1-197**

2024-08-27

Consolidated Grain and Barge Co.

Thomas J. Malecha, Executive Vice President

**15.1-197-1:** The commenter states, “With the implementation of a cap on biomass-based diesel (BBD) feedstocks, a phaseout of BBD pathways, and even more restrictive and costly traceability and verification system, this proposal will only lead to more combustion of fossil diesel fuel, higher fuel prices at the pump, and poorer air quality.”

**Response:** Please refer to Master Response 2. The comment provides an opinion on the environmental effects of the 15-day changes and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**15.1-197-2:** The commenter states, “By capping vegetable oil usage, the proposal risks stalling the progress made to reduce carbon emissions by creating a bottleneck in renewable diesel production. In fact, CARB’s own analysis supports this assessment.

CGB supports CARB’s findings presented at the April 2024 workshop that renewable diesel and biodiesel have a positive impact on both consumers and the environment. CARB’s “Staff Report: Initial Statement of Reasons” (ISOR) specifically modeled an alternative (Alternative 1) which “includes several policy mechanisms that have the effect on limiting the number of credits created from existing low-CI pathways” including “a limit on total credits from diesel fuels or sustainable aviation fuel produced from virgin oil feedstocks.” The report’s impacts are glaring – and each of them are attributed to more fossil diesel use in lieu of renewable diesel:

- **Increased Fuel Costs:** Alternative 1 had total costs of \$162 billion, 1 percent more than the scenario without a vegetable oil cap and similar policies. According to CARB, “The main reason is that diesel fuel is a larger part of the fuel mixture and continues generating large amounts of in-state deficits through 2046. This is because renewable diesel produced from virgin oil feedstock is phased out . . . and more fossil diesel is needed to fuel the remaining vehicles with internal combustion engines.”
- **Increased Emissions:** Alternative 1 had greater emissions of greenhouse gases, particulate matter (PM2.5) and nitrous oxide (NOx) than the baseline. The higher NOx and PM2.5 emissions in particular were attributed specifically to reduced renewable diesel - CARB found that “Alternative 1 increases NOx emissions by an additional 10,981 tons and increases PM2.5 emissions by 2,773 tons. Alternative 1 has more NOx and PM2.5 emissions than the proposed amendments because this scenario uses less renewable diesel than the proposed amendments.”

- **Fewer Health Benefits:** In line with its higher emissions, Alternative 1 also had correspondingly lower health benefits. CARB found that “Alternative 1 has a valuation of health benefits at \$1.58 billion compared to the proposed amendments with a valuation of \$4.98 billion, a difference of \$3.4 billion less in health benefits. The lower avoided health impacts of Alternative 1 are primarily associated with increases in PM<sub>2.5</sub> over the baseline due to lower utilization of renewable diesel.”

CARB Staff justifiably rejected Alternative 1, citing the fact that it “relies more heavily on fossil fuels...than the proposed amendments. As a result, [Alternative 1] does not achieve the same level of NO<sub>x</sub> and PM<sub>2.5</sub> emissions reductions as the proposed amendments and potentially exacerbates existing air quality challenges in the State.”

Additionally, the ISOR included an analysis, and the rejection, of another proposal by CARB’s Environmental Justice Advisory Committee which included a cap on vegetable oils set at 2020 levels. CARB found that “due to limitations on lipid biofuels and dairy biogas, the Comprehensive EJ Scenario results in higher volumes of fossil diesel being used than any of the other scenarios evaluated.” However, despite the demonstrated negative economic and health impacts of a vegetable oil cap, CARB’s 15-Day Changes seek to accelerate those adverse impacts through additional regulatory requirements and market limitations on crop-based feedstocks. The additional restrictions will effectively create a decreasing volumetric cap as the price of compliance to maintain market access becomes cost prohibitive.

CARB’s analysis therefore appears to be at odds with its own prior findings. The ISOR concludes that just the imposition of a cap on vegetable oil feedstocks will increase fossil diesel use. Yet, CARB’s proposal summary states that “this [vegetable oil cap] allows for California to displace up to 100 percent of the State’s fossil diesel demand with cleaner alternative diesel.” This will not be possible with the combined establishment of a cap on feedstocks, a phaseout of new BBD pathways, and the imposition of even more costly traceability and verification measures. CARB has not explained why it is rejecting or ignoring its prior conclusions in the ISOR.”

**Response:** Please refer to Response to 15.1-193-2.

**15.1-197-3:** The commenter states, “CGB urges CARB to eliminate the proposal’s cap on vegetable oil feedstocks. In its place, we continue to recommend implementing policies that encourage the responsible production and use of renewable feedstocks while addressing concerns about deforestation through targeted risk-based measures.”

**Response:** Please refer to Response to 15.1-193-3.

**15.1-197-4:** The commenter states, “But by minimizing RD and biodiesel production through a vegetable oil cap and related proposals, CARB would reduce environmental co-benefits and harm air quality. Because RD achieves significant NO<sub>x</sub> and PM<sub>2.5</sub> reductions relative to fossil diesel, a cap that artificially reduces RD in the market will reduce the environmental benefits of the LCFS. As discussed above, that is borne out by CARB’s own modeling in its ISOR.”

**Response:** Please refer to Response to 15.1-193-4.

**15.1-197-5:** The commenter states, “CARB’s continued recognition that some geographic regions carry a higher risk for deforestation is commendable. However, the proposal doubles down on a one-size-fits-all approach which, according to CARB’s Recirculated Draft Environmental Impact Analysis (EIA), would “create an even stronger incentive to utilize waste feedstocks,” without any additional analysis of direct or market-mediated effects from such a policy, nor any additional proposed compliance requirements to ensure waste feedstocks are not fraudulent.

Moreover, CARB’s proposal would further disadvantage regions of crop-based feedstock production with low-risk of deforestation (U.S. and Canada) that are already subject to multiple compliance programs, thereby favoring feedstocks produced in regions with a significantly higher risk of fraud or deforestation.

At CARB’s April workshop, staff noted additional measures which were under consideration to address potential fraud in sourcing waste feedstocks, including “additional detailed traceability, verification and/or enforcement of waste feedstocks to avoid fraud.” Yet, despite additional proposals that would accelerate waste feedstock demand, the 15-Day Changes inexplicably included none of those measures.”

**Response:** Please refer to Response to 15.1-193-5.

**15.1-197-6:** The commenter states, “CGB believes that CARB should not outsource sustainability certifications to the European Commission. CARB should recognize U.S. national, state, industry programs that meet the same intended goal of stopping deforestation and conversion. It is critical that CARB provide a tiered approach to feedstocks, fuels, and regions based on risk.

Regions identified as having the lowest risks of deforestation associated with crop-based feedstocks, such as the United States and Canada, crop-based feedstocks should be deemed to be in compliance with CARB’s proposed sustainability criteria.

In the event CARB is unwilling to deem U.S. and Canadian feedstocks compliant, for regions where crop-based feedstocks comply with another established sustainability system, such as the Renewable Fuel Standard (RFS) Canada’s Clean Fuel Regulation (CFR), or energy tax credit provisions in the Inflation Reduction Act (IRA), CARB should permit some level of aggregate compliance. These programs offer established frameworks for verifying sustainable practices and are a practical and effective way to achieve CARB’s environmental goals without sacrificing any sustainability gains.”

**Response:** Please refer to Response to 15.1-193-6.

**15.1-197-7:** The commenter states, “CGB believes there is room for improvement when it comes to modeling waste feedstocks. In most instances the waste feedstock lifecycle begins

when it is deemed “waste,” however key factors are not considered such as was that waste initially from a product that was grown on deforested land, for example. CGB notes that the environmental impacts of a product’s entire life cycle for waste feedstocks should be considered.”

**Response:** Please refer to Response to 15.1-193-7.

**15.1-197-8:** The commenter states, “In conclusion, CARB analysis, market and scientific data collectively demonstrate that consideration of a cap or limitation on crop-based feedstocks is unwarranted and in fact contradict AB 32, the LCFS regulations, and other California laws. Further, doing so unexpectedly and contrary to the reasonable expectations of regulated parties would undercut the necessary investments that are being made to support low carbon feedstocks and further feedstock expansion.

CGB also continues to encourage CARB to adopt a targeted, risk-based approach to implementing sustainability criteria under the LCFS. By accurately assessing deforestation risk, leveraging existing sustainability frameworks, and implementing targeted measures for high-risk regions, CARB can achieve its environmental objectives while also supporting a sustainable and resilient biofuels industry.”

**Response:** Please refer to Response to 15.1-193-8.

**Comment Letter 15.1-201**

2024-08-27

The Climate Center

Ellie Cohen, Chief Executive Officer

**15.1-201-1:** The commenter states, “**1. Remove the incentives to pollute that occur as a result of subsidies for avoiding methane emissions.**”

Subsidies can have unintended consequences in the long run. They encourage existing firms to increase their production capacity and attract new market entrants seeking to capitalize on the subsidies. Paradoxically, this often leads to an overall increase in pollution, contrary to the policy’s intended goal. Finally, subsidies transfer wealth to polluters. Subsidy programs effectively transfer wealth from public coffers to polluting entities. This not only strains government budgets but also contradicts the “polluter pays” principle, a cornerstone of environmental economics.”

**Response:** Please refer to Master Response 1. The comment provides an opinion on the effects of the avoided methane emissions crediting regulation and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**15.1-201-2:** The commenter states, “**3. The proposed 20 percent cap is a small step in the right direction toward capping lipid-based biofuels. A better approach would be to limit the volume rather than the share of vegetable oil used for fuel**”

The 20 percent proposed cap is a step in the right direction but its effect is limited since the total volumes of bio-based diesel fuel has been and will likely continue growing rapidly. So, this cap will have limited effect on the incentives for diversion of food to fuel. The increases in the consumption of biofuels, such as soy oil, intensifies the competition for land resources used for food production, thereby worsening global food insecurity and raising food prices. Unchecked growth in the biofuel market poses a significant risk of increasing global deforestation, especially as there are limits on waste oil collection and reuse, necessitating expanded production of soy oil and other oil substitutes like palm oil.”

**Response:** Please refer to Master Response 2. The comment provides an opinion on the proposed 20 percent cap and does not raise significant environmental issues related to the analysis in the Recirculated Draft EIA and does not require a written response under CARB’s certified regulatory program implementing CEQA. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**Comment Letter 15.1-207**

2024-08-27

Bunge

Robert Coviello, Chief Sustainability Officer and Government Affairs

**15.1-207-1:** The commenter states, “To have a one-size-fits-all approach to addressing certification of deforestation and conversion adds an unnecessary burden on agricultural supply-chains, and can result in diverting resources and focus from areas of the world where the risk of deforestation and conversion is the greatest.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-211**

2024-08-27

Jamie Katz and Phoebe Seaton, Central Valley Defenders of Clean Water & Air  
Bren Newell, Law Office of Brent J. Newell  
Tyler Lobdell, Food & Water Watch  
Christine Ball-Blakely, Animal Legal Defense Fund

**15.1-211-1:** The commenter states, “These factory farm gas policies are a dead end for the climate and a disaster for vulnerable communities, especially residents of the San Joaquin Valley. They are as impractical as they are unjust. The California Air Resources Board (“CARB”) has all the information it needs to reject this expensive, polluting, unjust, and ineffective climate strategy.”

**Response:** Please refer to Master Response 1. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**15.1-211-2:** The commenter states, “Offering 20 years of irrational and counterproductive carbon intensity values via avoided methane crediting is better than 30 years, but for all the reasons Commenters explain in our Initial Comments, any continuation of this backward policy undermines the LCFS and perversely encourages harm to vulnerable Californians already dealing with air and water polluted by the dairy industry.”

**Response:** Please refer to Master Response 1 regarding methane crediting and Master Response 4 regarding air and water pollution impacts. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**15.1-211-3:** The commenter states, “allowing projects to burn factory farm gas in combustion engines causes local air pollution while generating paltry quantities of electricity.<sup>6</sup>”

**Response:** Please refer to Master Response 4. The proposed amendments also include a requirement that biomethane to electricity projects must use a fuel cell to generate the electricity, when biomethane is matched via book and claim accounting. Fuel cells do not rely upon combustion, unlike the engines described by the commenter.

**15.1-211-4:** The commenter states, “As we explained in our Initial Comments, the increased stringency paired with increased, short-term factory farm gas incentives, will supercharge factory farm gas development and associated harms.<sup>10</sup>”

**Response:** Please refer to Master Response 1.

**15.1-211-5:** The commenter states, “In sum, the cost of juicing the LCFS to increase credit generators’ profit margins will be borne most heavily by lower income Californians, including lower income Californians in the San Joaquin Valley who are concurrently and disproportionately bearing the environmental, economic, and health costs of factory farming and factory farm gas production.”

**Response:** Please refer to Response to 15.1-211-1 regarding environmental justice issues.

**15.1-211-6:** The commenter states, “In doing so, CARB will accelerate the concentration of factory farming and factory farm gas production in the San Joaquin Valley. This would have the effect of concentrating more animals, more manure, and more pollution in a region that cannot bear those harms.”

**Response:** Please refer to Master Response 1. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**15.1-211-7:** The commenter states, “CARB’s proposed changes to section 95482(h) would reinforce and even intensify CARB’s encouragement of methane laundering in the production of dirty hydrogen. Beginning on January 1, 2031, CARB would allow fossil fuel hydrogen to generate credits only if it is paired with the environmental attributes of biomethane.<sup>14</sup> This modification would have the effect of increasing demand for livestock methane by codifying a monopoly whereby the environmental attributes of biomethane are the only avenue for fossil gas hydrogen producers to generate LCFS credits. Similarly, it will send market signals to biomethane producers and investors that there will be increased demand for biomethane to support hydrogen production in 2031 and thereafter. This modification will only encourage more factory farm gas production along with the air, water, and odor pollution that accompanies the concentration of cows, manure, and gas infrastructure.”

**Response:** Please refer to Master Responses 1 and 4. The comment provides an opinion on the environmental outcome of the proposed changes on the Proposed Amendments and does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**15.1-211-8:** The commenter states, “For the foregoing reasons, and in the foregoing ways, CARB must update the proposed Modifications to comply with its legal obligations and reform the LCFS. To do otherwise would be arbitrary, capricious, and an environmental injustice.”

**Response:** The comment provides a reference to the comments provided above. Please refer to Responses to 15.1-211-1 through 15.1-211-7.



**Comment Letter 15.1-213**

2024-08-27

Alternative Fuels & Chemicals Coalition

Rina Singh, PhD., Executive Vice President, Policy

**15.1-213-1:** The commenter states, “With a primary goal of reducing forest fire risk, excluding Industrial Forestland and the harvesting of their waste exposes a significant amount of acreage to this risk.”

**Response:** The wildfire impacts associated with reasonably foreseeable compliance responses related to the Proposed Amendments are addressed adequately in pages 138 and 139 of the Draft EIA. The changes to the Proposed Amendments have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA. Therefore, no changes to the EIA are required in response to this comment, and no further response is needed.

**Comment Letter 15.1-215**

2024-08-27

Sustainable Aviation Fuel Producers and Stakeholders

**15.1-215-1:** The commenter states, “Declining to address emissions from fossil jet fuel in this Rulemaking would also fail to address concerns of California’s environmental justice communities, who have explicitly asked CARB to support displacement of fossil jet fuel with SAF. Not finalizing obligations on fossil jet fuel prevents disadvantaged Californians from realizing the substantial air quality benefits (i.e., reductions of NOx, PM 2.5, and SOx) provided by SAF.

**Response:** With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**Comment Letter 15.1-217**

2024-08-27

Biofuelwatch

Gary Graham Hughes, Americas Program Coordinator

**15.1-217-1:** The commenter states, “In the context of the environmental review of the refinery conversion projects, the proposed changes to the LCFS are particularly important, as there is a clear admittance that climate and biodiversity impacts from deforestation and land use change, direct and indirect, for the provision of feedstocks for liquid biofuels like ‘renewable diesel’ (RD), are of serious concern. This contrasts dramatically with previous public positions communicated by CARB leadership. It is worth reminding members of the Board that, during the California Environmental Quality Act (CEQA) review by Contra Costa County of both the Phillips 66 Project and the Marathon-Neste Project, CARB executive staff came to county proceedings to make broad statements that deforestation was not a concern, and that the LCFS guards stringently against such negative environmental and climate impacts.”

**Response:** Please refer to Master Response 2.

**15.1-217-2:** The commenter states, “How remarkable it is that CARB now, in both this current version and in the initial set of amendments for the LCFS, has been so explicit as to recognize the globally understood threat to natural ecosystems that is embodied in an increase in demand for high deforestation risk commodities like soy for making energy products.”

**Response:** Please refer to Master Response 2.

**15.1-217-3:** The commenter states, “It is essential for members of the Board to understand that certification schemes are proven ineffective for removing deforestation from commodity supply chains. The amendments are suggesting that certification of feedstock commodities will mitigate or address the harms that arise from increased demand for these products – yet the evidence shows otherwise: certification is an ineffective tool for assuring sustainability in supply chains<sup>7</sup>.”

**Response:** Please refer to Master Response 2.

**15.1-217-4:** The commenter states, “Fundamentally, as stated above, certification is not designed to prevent deforestation and other environmental harms.”

**Response:** Please refer to Master Response 2 and refer to Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA and Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS.

**15.1-217-5:** The commenter states, “Certification schemes are recognized to increase demand for the high deforestation risk commodity in question, perversely driving the very motor of destruction that the certification scheme was intended to curb.”

**Response:** Please refer to Master Response 2.

**15.1-217-6:** The commenter states, “CARB staff have taken steps now that require members of the Board to become expert in certification schemes; to advance the amendments and to approve in concept the proposal by CARB staff to rely on certification schemes to address the environmental harms associated with the production of feedstocks like soy requires doing serious due diligence.”

**Response:** The comment provides general environmental concerns and does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment. Please refer to Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA and Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS.

**15.1-217-7:** The commenter states, “And it does nothing to assure that California does not become addicted to high emissions high deforestation risk liquid biofuels like soy-based renewable diesel. We don’t need to say anything more about this proposed measure, other than how ironic it is for the refineries to discover that after CARB went to bat for them to push the permitting of the refinery conversions through to the finish line, that CARB is now desperately casting around for a way to put the high deforestation risk liquid biofuels Pandora back in their box.”

**Response:** Please refer to Master Response 2.

**15.1-217-8:** The commenter states, “A great deal of emphasis is made in the proposed amendments to addressing the clear deforestation risks arising from making fuels from virgin soy and canola oil. We have already addressed the inadequacies of the plan for mitigating those harms.”

**Response:** Please refer to Master Response 2.

**15.1-217-9:** The commenter states, “What has not been mentioned, either in this letter or in the amendments, are the environmental harms associated with the reliance on animal tallow from the global livestock industry as a feedstock for making liquid biofuels. It is well known that the links between the livestock industry and the soy agroindustrial model are very strong, especially in vulnerable landscapes in regions like South America. The amendments do nothing to recognize or mitigate the harms from what we are calling the ‘great California fats grab’ – the way that the LCFS is incentivizing fuel producers to secure access to as many animal fats and related feedstocks from around the world to make fuels to sell in California. These dynamics bring up another crucial issue that the amendments fail to address, that of Indirect Land Use Change (ILUC). Market elasticity and existing uses for the commodities that are coveted now for making fuels like renewable diesel result in increased demand for fats products that must be then be replaced and substituted for their existing uses. The amendments do nothing to address these concerns.”

**Response:** The comment provides general environmental concerns and does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment. Please refer to Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA and Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS. The Recirculated Draft EIA also disclosed that a potential compliance response of the Proposed Amendments could be increases in collection and processing of biofuel feedstocks, including animal fat/tallow oil from South America. Please refer to Master Response 2 regarding land use change impacts associated with feedstock collection and processing for biofuels.

**15.1-217-10:** The commenter states, “In this report clear arguments are made that soy must be considered a high-ILUC risk feedstock (something that the current LCFS Rulemaking fails to do) and that in order to protect global forests an aggressive phase out of palm and soy-based biofuels is needed immediately.”

**Response:** Please refer to Master Response 2.

**15.1-217-11:** The commenter states, “Much more research and analysis need to be done about the viability and environmental repercussions of granting a special climate value to making liquid biofuels from soy. The available evidence shows that this is not a climate solution. By rushing forward with these amendments to reinforce existing credit pathways for making liquid biofuels from commodities like soy CARB is exacerbating the existing risk of elevating California climate policy to become a driver of global deforestation.”

**Response:** Please refer to Master Response 2. Please refer to Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA and Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS. No changes to the EIA are required in response to this comment.

**15.1-217-12:** The commenter states, “It is certainly noteworthy that in 2024 CARB staff and leadership have admitted to what they so vigorously denied for so long: that deforestation is a real problem associated with making liquid biofuels from soy and other vegetable oils. Now we need the agency to take action in a responsible manner, and not just put a sheen of certification window dressing on the problem to distract the public with known tools of greenwashing. As it stands, the current package of amendments to the LCFS fails to meet those responsibilities. We beseech the members of the Board to demand a course correction, and to anticipate now what it will take to reject the current amendments and remove high emissions high deforestation risk biofuels from the portfolio of climate solutions being promoted by state authorities. There is no time left for inaction.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-218**

2024-08-27

Sustainable Advanced Biofuel Refiners Coalition

Joe Jobe, CEO

**15.1-218-1:** The commenter states, “SABR's top concern is the proposed cap on soy and canola-based biomass-based diesel. This proposed measure is constructed around misplaced negative biases about modern production agriculture and based on contrived theories of indirect land use change (ILUC) that have not held up to nearly two decades of actual scientific evidence and data.”

**Response:** Please refer to Master Response 2.

**15.1-218-2:** The commenter states, “The theory of ILUC starts with the flawed assumption that when an agricultural material is used to produce a gallon of biofuel, then agricultural land is necessarily expanded causing a conversion of land from grassland or forestland to cropland.”

**Response:** Please refer to Master Response 2.

**15.1-218-3:** The commenter states, “ILUC theories and assumptions have been *modeled* for nearly 20 years to forecast future ILUC; those modeled forecasts have been used to assign penalties in real time in the form of carbon scoring to crop-based fuels. We now have the benefit of hindsight to look at two decades of historic data and determine whether the models produced accurate forecasts. They did not.”

**Response:** Please refer to Master Response 2.

**15.1-218-4:** The commenter states, “Equitable treatment of the baseline fuel is also a necessary part of any lifecycle analysis. It should be noted that since 2008, the hydraulic fracturing boom has caused land use changes from fracking wells that can be seen from nearly any domestic commercial airline flight. Yet this land use change from the baseline fuel, which can be seen with the naked eye, is often not included in emissions models for the petroleum baseline.

The RFS statute required that the EPA use 2005 petroleum carbon emissions as the baseline for comparison with measuring biofuel emissions. The EPA declined to include indirect emissions in the petroleum baseline and assumed them to be zero. Both EPA and CARB have historically and to this day cling to the theories that biofuels create significant indirect emissions and baseline petroleum creates no indirect emissions. These theories and assumptions did not factor in major technological developments in both the baseline petroleum and biofuel making both assumptions wrong.”

**Response:** Please refer to Master Responses 2 and 5.

**15.1-218-5:** The commenter states, “The assumption that biofuels create ILUC emissions did not factor in major yield improvements as discussed above enabled by the broad adoption of precision agricultural technology and sustainable farming practices.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-219**

2024-08-27

International Council on Clean Transportation

Nikita Pavlenko, ICCT Fuel Program Lead

**15.1-219-1:** The commenter states, “Second, CARB’s crediting restriction only applies to soybean and canola oil consumed as BBD, which could incentivize the consumption of other vegetable oils and oilseed cover crops with their own market and environmental risks.”

**Response:** Please refer to Master Response 2. The comment provides an opinion on the potential environmental risks associated with the crediting restoration on soybean and canola oil and does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment. However, this comment is acknowledged for the record and has been reviewed prior to Board consideration. No further response is required.

**15.1-219-2:** The commenter states, “Due to significant modeling uncertainty, adopting more conservative ILUC values can help address the potential for unintended indirect emissions from biofuel demand in the LCFS program. There is a risk that the current set of ILUC values adopted by CARB could underestimate these emissions impacts due to recently challenged modeling assumptions within GTAP-BIO such as the modeling of unmanaged forest land and high rates of yield intensification, as explained in our February comments to the proposed LCFS amendments.<sup>35</sup> Similarly, recent research from a contributor to CARB’s 2015 ILUC analysis has identified major structural issues associated with the GTAP ILUC model, including the model’s use of correlational behavior rather than empirical studies that establish causality and misapplication of these relationships to different geographic regions and functional forms.<sup>36</sup> Berry notes that GTAP predicts low rates of deforestation and high rates of afforestation based on assumptions from a single study that misrepresents real-world economic behavior; thus, the GTAP model highly underestimates forestland conversion and associated ILUC. GTAP also relies on outdated trade data that does not predict the complete effects of US trade policy on global land use. Further, CARB’s 2015 analysis is inadequate to assess the risk of ILUC from new feedstocks and production regions.

We encourage CARB to evaluate ILUC emissions for new geographic regions based on empirical data. Updating the LUC values in Table 6 of the regulation could lead to a meaningful change in the BBD compliance trajectory that could be implemented within the existing structure of the LCFS that is not sufficiently addressed under the current proposals. Due to some of the limitations with the GTAP-BIO model that may result in systematic underestimation of ILUC emissions highlighted above, we also recommend that CARB either use a combination of models or use an alternative model in order to generate a more scientifically robust analysis. Examples of a multi-model approach include the 2019 ICAO-CORSIA analysis of ILUC emissions for SAFs<sup>37</sup> and EPA’s 2023 model comparison exercise for corn ethanol and soy biodiesel.<sup>38</sup>

**Response:** Please refer to Master Response 2.





**Comment Letter 15.1-220**

2024-08-27

Anew Climate, LLC

**15.1-220-1:** The commenter states, “Methane is the second-largest contributor to global warming after carbon dioxide due to its alarmingly high concentration in the atmosphere and the fact that it is a potent greenhouse gas (GHG) with impact over 80 times greater than carbon dioxide over a 20-year period. The critical need to address methane as a potent short lived climate pollutant was well-stated in CARB’s 2017 Short Lived Climate Pollutant (SLCP) Reduction Strategy and echoed by other leading authorities. There is no more effective or immediate step that can be taken to address climate change than aggressively and rapidly reversing emissions of fugitive methane from all sectors, including society’s organic waste streams.

Mandatory methane abatement from farming operations is not currently on the horizon either at the state level in California or at the federal level. If mandatory abatement is implemented, the current LCFS regulation already contemplates in Section 95488.9(f)(3)(B) the phase-out of avoided methane crediting for projects subject to mandatory abatement. Given the absence of mandatory methane abatement and the continued methane emissions from farming operations that are meeting America’s meat and dairy demands, imposing a specific date for phasing out avoided methane crediting does not make sense for the climate. Capturing methane from California’s methane sources (e.g., landfills, dairies, and wastewater) is critical for achieving California’s climate targets. As staff noted in the ISOR, “[...] capturing methane from dairies is one of the primary measures for achieving the state’s 2045 greenhouse gas reduction targets and SB 1383 methane reduction target.”<sup>3</sup> Without anaerobic digesters, California would not be able to meet its SB 1383 methane reduction goals. Eliminating biomethane pathways used to produce hydrogen may also unduly restrict the development of low-CI hydrogen supply that California needs in order to displace fossil fuels. Increasing the supply of low-CI renewable hydrogen is a key strategy identified in the 2022 Scoping Plan Update and supports MDV and HDV ZEVs.”<sup>4</sup>

**Response:** Please refer to Master Response 1.

**15.1-220-2:** The commenter states, “However, if this new requirement is adopted, over one third of private forestlands will be eliminated from the potential wood supply basket and result in biomass from 75% of all California forests being unviable for biofuels production. Excluding large landowners from participating in the LCFS program is clearly self-defeating as they are key partners in any successful long-term solution that scales up forest management successfully in California. Excluding them from the program will ultimately result in higher fuel loads on those lands and thus a heightened fire risk and ultimately higher emissions if/when there is a wildfire, which runs counter to the stated goals and policy direction on wildfires in the 2022 Scoping Plan.”

**Response:** Please refer to Master Response 2. With regards to wildfire impacts, please refer to pages 138 and 139 of the Draft EIA for a detailed discussion. The changes to the Proposed

Amendments have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA. Therefore, no changes to the EIA are required in response to this comment.

**Comment Letter 15.1-221**

2024-08-27

California Environmental Voters

Gracyna Mohabir, Clean Air and Energy Regulatory Advocate

**15.1-221-1:** The commenter states, “• Returning to exempting fossil jet fuel as a deficit generator. Staff’s initial proposal to regulate fossil jet fuel for intrastate flights within the LCFS program, or about 10% of all fossil jet fuel in the state, was a promising step to address harmful emissions from airports. Per CARB’s California Aircraft and Airports Fact Sheet released earlier in the year, there are multiple efforts being made to reduce emissions on several fronts as airports act as mobile source hotspots<sup>1</sup>. The actions and future initiatives from CARB and other relevant bodies remain promising strategies to cut emissions from vehicles and non-aircraft sources, however maintaining status quo on fossil jet fuel is a lost opportunity to begin this critical work. Intrastate flights are a logical starting point, and we urge staff to reconsider.”

**Response:** The comment addresses general concerns about emissions from fossil jet fuel does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment. The potential air quality and GHG emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. As discussed in Chapter 3.0 of the Recirculated Draft EIA, the short-term construction-related and long-term operational-related impacts on air quality would be significant and unavoidable with implementation of the Proposed Amendments. However, the impacts on GHG emissions would be beneficial because the comparatively small level of GHG emissions related to construction and operation of facilities associated with the compliance responses would be offset by the reductions in GHG emissions from the implementation of the Proposed Amendments. Please refer to pages 40 through 61 of the Recirculated Draft EIA for a detailed discussion of air quality and GHG emissions impacts associated with the Proposed Amendments.

**15.1-221-2:** The commenter states, “We strongly encourage staff to reconsider capping lipid-based biofuels at 2020 levels. A 20% limit on the number of credits producers can receive for canola- and soybean- based biofuels is a promising start, and we appreciate staff bringing this solution to the table. This, coupled with new updates to LUC factors, reflects concerns about how ramping up use of biofuels will have impacts deforestation and global hunger as these feedstocks are in greater demand. However, we remain concerned that biofuel production maintains the legacy of harmful emissions for communities adjacent to refineries. The proposed 20% limit on crediting these specific fuel types is a good signal but is not as inclusive as a volume-based cap for all lipid-based biofuels. The latter may provide more opportunities to limit environmental and credit price impacts by being more expansive in its scope.”

**Response:** Please refer to Master Response 2 regarding impacts related to land use change and deforestation. With regards to the comment related to environmental justice and economic factors, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed

Amendment's potentially significant physical impacts on the environment. CEQA does not require an analysis of environmental justice and economic impacts. As such, comments related to environmental justice and economic factors are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-221-3:** The commenter states, "Given that the dairy sector is the largest contributor of methane emissions<sup>3</sup>, we should instead be putting greater emphasis on implementing thorough and multifaceted mitigation strategies. Community members who live in proximity to dairy operations have shared their experiences with air and water quality issues, as well as lasting health impacts. Avoided methane crediting is not the standard for other industries, nor should it be for the sector that contributes the most to California's methane inventory. Staff's proposed phase-out date for avoided methane crediting is 2040 – this timeline must be expedited to see immediate benefits for community members, as well as to improve out short-lived climate pollutant management strategy. This distant date is incongruent with our state climate goals as well as commitment to environmental justice."

**Response:** Please refer to Master Responses 1 and 4. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration.

**Comment Letter 15.1-222**

2024-08-27

Earthjustice

Sasan Saadat and Nina Robertson

**15.1-222-1:** The commenter states, “Avoided methane crediting distorts the fuels market and perversely rewards polluters. Despite the overwhelming evidence about its adverse impacts to communities and to attainment of California’s clean air and climate goals, Staff’s proposed changes fail to phase out avoided methane crediting on the necessary timeline. This directly contradicts the direction that many Board member provided at the September 2023 Board Meeting.”

**Response:** Please refer to Master Response 1.

**15.1-222-2:** The commenter states, “Staff’s proposed changes to hydrogen crediting continue to allow fossil gas-derived hydrogen to generate credits so long as producers purchase unbundled environmental attributes from biomethane producers, which are almost exclusively out-of-state. This proposal perversely undermines in-state green hydrogen production and harms California communities near dirty hydrogen facilities. Staff’s proposed changes to deliverability requirements for biomethane are vague, contingent, and unhelpful.”

**Response:** With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**15.1-222-3:** The commenter states, “The 15-day changes may render electrolytic hydrogen even more polluting than hydrogen produced from fossil gas.”

**Response:** Please refer to response to comment R22-9. The comment addresses general concerns about the book and claim provisions in the LCFS program and does not raise issues related to the adequacy of the EIA. Please refer to Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA and Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS. No changes to the EIA are required in response to this comment.

**15.1-222-4:** The commenter states, “(2) Staff’s previous efforts to constrain fuels that increase pressure on global deforestation are no longer effective.<sup>3</sup> We also explained that the two measures proposed by Staff (i.e. chain-of-custody certification and exclusion of palm-oil-derived fuels) will not solve the problem.”

**Response:** Please refer to Master Response 2.

**15.1-222-5:** The commenter states, “Even since December it has become increasingly clear that a volume limit on biomass-based diesel produced from lipids is not only necessary but also urgent. The evidence strongly suggests that without such a limit, the LCFS could continue to drive unsustainable practices that undermine the state’s climate goals and disproportionately impact vulnerable communities.”

**Response:** Please refer to Master Response 2. The comment addresses general concerns about achieving the state’s climate goals and does not raise issues related to the adequacy of the EIA. Please refer to Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA and Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS. No changes to the EIA are required in response to this comment.

With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-222-6:** The commenter states, “The exclusion of these fuels opens the door for fuel shuffling and increases the likelihood that producers will simply switch to other problematic feedstocks, which risk driving up food prices and contributing to deforestation, the very outcome CARB is purportedly attempting to address.”

**Response:** Please refer to Master Response 2 regarding deforestation impacts.

The EIA is not meant to address economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendment’s potentially significant physical impacts on the environment. As such, comments related to price concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-222-7:** The commenter states, “First, as we have explained in prior comments, the existing LUC evaluation framework is outdated and inappropriate. The most recent update was in 2015—well before the recent surge in renewable diesel (RD) production, which CARB did not anticipate at that time. This outdated evaluation does not accurately reflect the current landscape of biofuel production and its associated impacts. The spike in RD production over the past several years has likely altered the land use dynamics significantly, yet the regulatory framework has not kept pace with these changes. The inherent risk-amplification that comes from these much larger raters of consumption means that the EO is already unjustified in continuing to rely on outdated data, which cannot be considered a reliable safeguard against the environmental impacts of increased biofuel production.”

**Response:** Please refer to Master Response 2.

**15.1-222-8:** The commenter states, “Further, the pressure to meet increasing demand for biofuels can lead to indirect land use changes (ILUC), where agricultural activities are displaced to forested areas as more land is allocated to biofuel feedstock production. This phenomenon, as described by scientist experts, exacerbates deforestation and results in significant carbon emissions, potentially offsetting the purported climate benefits of biofuels.<sup>10</sup> Failure to address ILUC can undermine the environmental benefits of biofuels and contribute to further deforestation.<sup>11</sup>

While sustainability criteria are designed to mitigate the environmental impacts of biofuel production, they are insufficient in addressing the scale and complexity of deforestation. These criteria often focus on preventing direct deforestation within certified areas but fail to account for the broader landscape-level impacts, including ILUC and the displacement of food production.

The provision requiring that biomass be sourced only from land cleared or cultivated prior to January 1, 2008, is insufficient and misleading as a guardrail. While it ostensibly aims to prevent deforestation and preserve natural habitats, it fails to address the broader issue of ILUC, where agricultural activities are displaced to other areas, leading to new deforestation and ecosystem disruption. This provision gives a false sense of security, as it does not account for the cascading effects of expanding biofuel production, which can indirectly incentivize the clearing of forests elsewhere, undermining the very environmental protections it seeks to uphold.

Sustainability criteria are limited in preventing deforestation, noting that certification schemes often lack the enforcement mechanisms needed to ensure compliance across entire supply chains. Moreover, many of these criteria do not adequately consider the cumulative impacts of expanding biofuel production, particularly in regions with weak governance and land tenure issues, where illegal deforestation is rampant.”

**Response:** Please refer to Master Response 2.

**15.1-222-9:** The commenter states, “The new provision<sup>12</sup> that requires best management practices represents a bare minimum requirement for mitigating the environmental impacts associated with biofuel production. The practices outlined—maintaining biodiversity, enhancing soil fertility, minimizing runoff, and reducing unsustainable water use—are critical not only for reducing GHG emissions but also for safeguarding California’s natural resources. Delaying its implementation would risk exacerbating emissions, degrading biodiversity, and contributing to soil and water contamination—outcomes directly counter to the broader mission of CARB to protect air quality and public health.”

**Response:** The comment provides an opinion on the proposed 15-day changes to the LCFS and does not raise issues related to the adequacy of the EIA. Mitigation measures are identified in the Draft EIA and Recirculated Draft EIA to reduce and mitigate potentially significant environmental impacts associated with the implementation of the LCFS. Refer to Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA and Chapter 3.0,



“Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA for identified mitigation measures. Please also refer to Master Response 4 in regards to air and water quality analysis. No changes to the EIA are required in response to this comment.

**15.1-222-10:** The commenter states, “In our comments on the ISOR we explained that avoided methane crediting must end because it extravagantly rewards an unregulated industry with accounting that distorts the LCFS program, undermines transportation goals, and worsens environmental injustices for frontline communities.”

**Response:** Please refer to Master Response 1 for a discussion related to methane crediting. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration.

**15.1-222-11:** The commenter states, “Second, Staff fail to address impacts to air quality in communities impacted by SMR facilities that will continue to reap rewards from the LCFS. Evidence shows that SMR facilities emit health-harming pollution such as NOx, carbon monoxide, and fine particulate matter.<sup>26</sup> The LCFS’s generous crediting of SMR fossil hydrogen paired with biomethane attributes threatens the achievement of air quality standards in California’s most polluted air basins.”

**Response:** Please refer to Master Response 4. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration.

**Comment Letter 15.1-224**

2024-08-27

Pacific Gas and Electric Company

Fariya Ali, Air & Climate Policy Manager

**15.1-224-1:** The commenter states, “• Restricting qualified forest biomass feedstock to “non-industrial forestlands” could hinder development of biofuels projects that support wildfire risk mitigation.”

**Response:** As discussed in page 40 of the Recirculated EIA, the revisions and additional information in the Recirculated Draft EIA have not shown any new, substantial environmental impacts, any substantial increases in the severity of an environmental impact, or any alternative or mitigation measure considerably different from those considered in the Draft EIA. Rather, the revisions and additional information have resulted in the addition of substantial new information compared to what was presented in the Draft EIA. The wildfire impacts associated with reasonably foreseeable compliance responses related to the Proposed Amendments are addressed adequately in pages 138 and 139 of the Draft EIA. The changes to the Proposed Amendments have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA. Therefore, no changes to the EIA are required in response to this comment, and no further response is needed.

**15.1-224-2:** The commenter states, “Greenhouse gases are a global, not local issue, which a physical deliverability requirement ignores.”

**Response:** Climate change caused by GHG emissions is a global phenomenon. The effects of GHG emissions are considered cumulative in the EIA. As discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA, the impacts related to GHG emissions would be beneficial because the comparatively small level of GHG emissions related to construction and operation of facilities associated with the compliance responses would be offset by the reductions in GHG emissions from the implementation of the Proposed Amendments. Refer to Chapter 3.0 of the Recirculated Draft EIA for a detailed discussion of GHG emissions associated with the LCFS.

**15.1-224-3:** The commenter states, “PG&E has taken a stand that catastrophic wildfires shall stop in California. In addition to PG&E’s own mitigation activities and innovations, partnership with other stakeholders (including private landowners and state, federal, and local governments) will be necessary to achieve this stand. Removal of forest biomass is a critical tool in reducing the risk of wildfires and the LCFS program can help incentivize beneficial use of this biomass. PG&E is concerned that the amendments proposed in the 15-Day Draft8 could undermine this incentive by limiting the forestlands from which woody biomass could be considered as a specified source feedstock (and thus eligible for a reduced carbon intensity score that reflects lower emissions or credit for use of a waste, residue or by-product). Eliminating waste from “industrial forestlands” from eligibility would limit the ability of biofuel producers to secure long-term fuel contracts from dedicated sources, a critical element for project financing. Removal and utilization of non-merchantable forest biomass is critical for

wildfire risk reduction on both industrial and non-industrial lands. Denying all forest biomass from non-industrial forestlands, including non-merchantable biomass, from being a qualifying feedstock could hinder the development of biofuel projects seeking to support the health of California's forests and lands. PG&E therefore urges CARB to further discuss these provisions with relevant stakeholders and remove or modify this restriction."

**Response:** Please refer to Response to 15.1-224-1 regarding wildfire impacts.

**Comment Letter 15.1-225**

2024-08-27

Patricia Seffens

**15.1-225-1:** The commenter states, “The proposed draft continues to provide credits for industrial dairy “biogas.” This financial support continues to incentivize the expansion of large-scale factory dairy farms, causing serious harm to the health of surrounding communities, increasing the greenhouse gases and pollution generated by the production of feed for cows confined to barns; concentrated methane emitted by pools of waste; the inevitable leakage of methane during storage and transportation; and greenhouse gas emissions produced by combustion of the product. We urge CARB to phase out support for biomethane as rapidly as possible.”

**Response:** Please refer to Master Response 1.

**Comment Letter 15.1-226**

2024-08-27

Western Iowa Energy

Bradley D. Wilson, LLC - President

**15.1-226-1:** The commenter states, “The proposed 20% cap on BMBD is contrary to AB32, which mandates that CARB’s regulatory activities should not interfere with efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions. The limit could drive increased use of fossil fuels, which may have less favorable air quality impacts compared to renewable fuels. CARB’s modeling in the ISOR for the Proposed Changes projected fewer GHG emissions reductions and worse health outcomes due to increased PM2.5 levels from the use of fossil diesel instead of renewable diesel. The 20% cap, therefore, seems inconsistent with CARB’s mandate to protect air quality while achieving cost-effective GHG reductions.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.1-228**

2024-08-27

Neste US, Inc.

Donna Warndorf, Head of Public and Regulatory Affairs, Americas

**15.1-228-1:** The commenter states, “Neste emphasizes the significant negative impact that the proposed changes in this 15-day package will have on renewable energy in California and throughout the U.S. With this rulemaking, CARB has an opportunity to implement Governor Newsom’s July 2022 directive to accelerate refinery transitions away from petroleum to the production of clean fuels and to incentivize use of SAF. The 45-day package published in December, 2023, was on track to achieve that goal. However, the unintended consequences of this 15-day package reverse that trajectory.”

**Response:** Page 40 of the Recirculated EIA explains that the revisions and additional information in the Recirculated Draft EIA have not shown any new, substantial environmental impacts, any substantial increases in the severity of an environmental impact, or any alternative or mitigation measure considerably different from those considered in the Draft EIA. Rather, the revisions and additional information have resulted in the addition of substantial new information compared to what was presented in the Draft EIA. The proposed 15-day changes to the LCFS would not result in any new, substantial environmental impacts than what are considered in the Draft EIA.

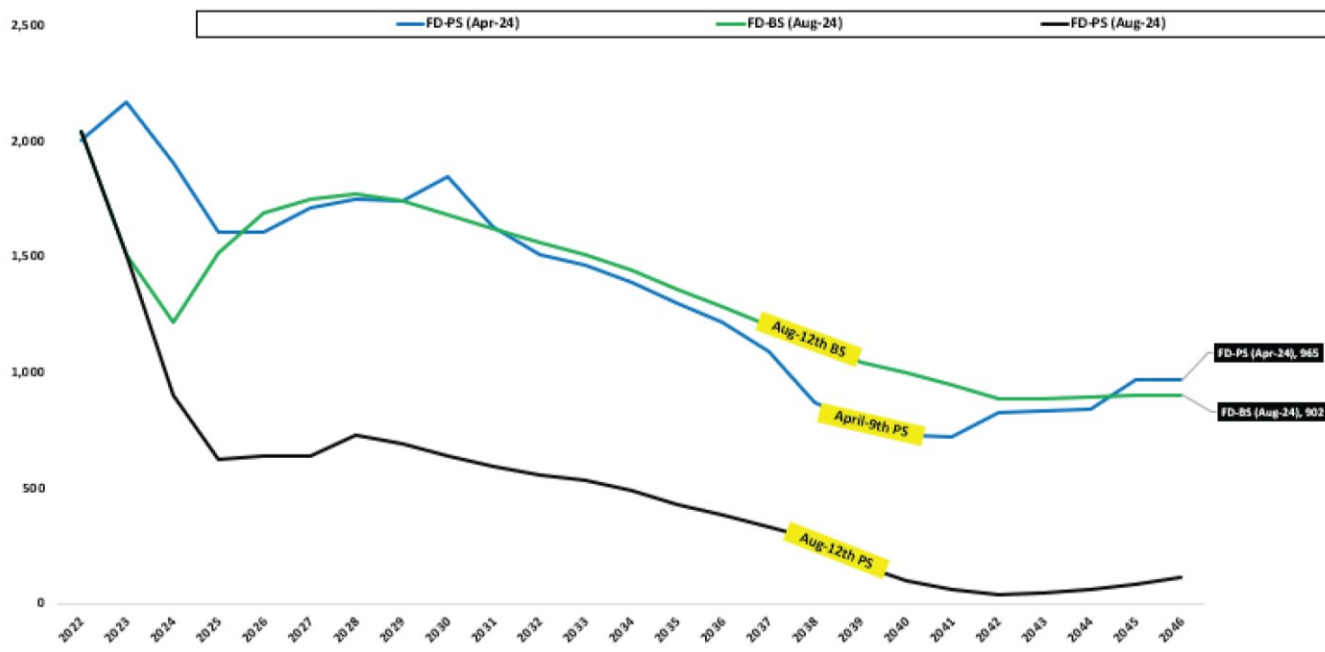
**15.1-228-2:** The commenter states, “Neste strongly believes that this proposal, among several meant to limit liquid renewable fuels, is likely to lead to higher consumption of fossil diesel, as noted by CARB in the April 10th LCFS workshop<sup>16</sup> (see slide 21). However, the modeling CARB presented as part of this 15-day package does not reflect that, making Neste question the accuracy of the environmental analysis for this 15-day package. Figure 5 below shows how fossil diesel fared in this 15-day package, and Neste would expect the April 9th Proposed Scenario (pulled from 45-day package) shown in blue below to be identical to the August 12th Baseline Scenario shown in green below. That is not the case, and there is no explanation for the decrease in fossil diesel use shown from 2023 through 2025 under the August 12th Proposed Scenario shown in black.

Under the August 12th Proposed Scenario (black line) CARB is showing three different things that cannot occur at the same time: 1) fossil diesel use to drop to 0.5 billion gallons consumed in 2025, 2) 0.5 billion gallons of fossil diesel, would mean RD use would be close to 3 billion gallons and/or significant electrification of heavy-duty trucks, and 3) credit price at \$150-220/tonne. First, if the annual fossil diesel use dropped to 0.5 billion gallons, and rest of the diesel needed would be replaced by RD or ZEVs, the credit market would be far from balanced in 2025 and the price far from \$150-220. Secondly, CARB is heavily underestimating overall diesel demand. With the current trajectory until 2025, Neste estimates liquid diesel demand to be 3.5 - 3.8 billion gallons. This means that in the 0.5 billion gallon fossil diesel scenario, RD usage should be ~3 billion gallons, which could theoretically happen, however it is very unlikely at current low credit prices. If overall liquid diesel demand dropped to 3 billion gallons as modeled by CARB, then there should be 10x more heavy duty ZEVs on the roads in 2025.

This scenario is even less likely than RD usage of 3 billion gallons. CARB's modeling simply does not make sense and the implications are risky negative impacts to the diesel market and other unintended consequences from this 15-day package.

**Figure 5: Fossil Diesel Volumes Under 15-day and 45-day Package Scenarios**

Fossil Diesel Volumes in CA through 2046  
*New August 12th Scenario's*



This proposal also introduced the concept of “new” pathways. It is unclear in what category a pathway renewal will fall, creating uncertainty for pathway holders. This policy could also disincentivize investment in new innovative feedstocks for RD/SAF production using Climate Smart Ag (CSA). Instead of creating uncertainty for those investing in new RD/SAF production technologies, Neste recommends eliminating these provisions and maintaining the technology neutrality that has made the LCFS program so successful in reducing emissions from the transportation sector. To tackle climate change, California will need all the possible solutions and CARB should not eliminate climate solutions.”

**Response:** Please refer to Master Response 2 and responses to comments raised in Comment Letter R-11.

**15.1-228-3:** The commenter states, “Moreover, some studies suggest that winter canola can increase yields of subsequent wheat<sup>19</sup>, break wheat pest cycles and improve soil health thanks to soil coverage increase and crop rotation diversification. This combined with the production of canola meal (around 60% of grain production) to the food industry can considerably reduce the ILUC risk and even bring additionality. The LUC evaluation process proposed in this 15-

day package could end investment in winter canola and other lower CI feedstocks that will ultimately impact the ability to reach the states carbon reduction goals.”

**Response:** As discussed in Chapter 3.0 of the Recirculated Draft EIA, the impacts on GHG emissions would be beneficial because the comparatively small level of GHG emissions related to construction and operation of facilities associated with the compliance responses would be offset by the reductions in GHG emissions from the implementation of the Proposed Amendments. Refer to Master Response 2 for a discussion of land use change.



**Comment Letter 15.1-236**

2024-08-27

Nuseed

Scott R. Hedderich, North America Policy and Government Affairs Director

**15.1-236-1:** The commenter states, “We also support the concepts behind using best environmental management practices that reduce GHG emissions or increase GHG sequestration. However, CARB lists just four vague “practices” as meeting sustainability certification requirements (those that maintain or enhance biodiversity habitat on agricultural or forested lands; those that enhance soil fertility and avoid erosion or compaction; those that apply fertilizers in a manner that minimizes runoff, and soil and water contamination; and those that reduce unsustainable water use, and minimize diffuse and localized pollution from chemical residues). This short section of the regulation will undoubtedly be the target of much attention, and the interpretation of these words are critical to the success or failure of new innovative feedstocks and agricultural practices.”

**Response:** Please refer to Master Response 2. The comment does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment. This comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration.

**Comment Letter 15.1-239**

2024/08/27

Sunflower Alliance

Charles, Davidson

**15.1-239-1:** The commenter states, “I am writing to express my concern regarding the potential limits of the stringency and environmental effectiveness of “20% cap” amended policy on renewable diesel when using virgin food oils, such as soybean and canola oil feedstock.”

**Response:** Please refer to Master Response 2.

**15.1-239-2:** The commenter states, “The arbitrary 20% cap does not take into account the actual embedded CO<sub>2</sub> in the farm-to-wheel lifecycle of renewable diesel (or SAF) produced from virgin food oil versus renewable diesel (or SAF) produced from waste food oils, fats and greases.”

**Response:** Please refer to Master Responses 2 and 5.

**15.1-239-3:** The commenter states, “The California Air Resources Board’s approach to renewable diesel biofuels, particularly those made from virgin food oils, is fundamentally flawed. CARB’s carbon neutrality claim for tailpipe CO<sub>2</sub> emissions arbitrarily eliminates three-quarters of the full lifecycle emissions of these biofuels from regulatory consideration. This profound greenhouse gas accounting ledger exclusion, for the renewable diesel tailpipe CO<sub>2</sub> emissions exemption allowance, artificially lowers its regulatable GHG footprint, while masking its true environmental impact.”

**Response:** Please refer to Master Response 5 regarding biogenic fuels.

**15.1-239-4:** The commenter states, “Additionally, CARB markedly underreports renewable diesel’s refinery-level per barrel hydrogen requirements and per barrel CO<sub>2</sub> GHG emissions, as clearly evidenced by the Contra Costa County Environmental Impact Report data, published after CARB approval.”

**Response:** Please refer to Master Response 5.

**15.1-239-5:** The commenter states, “In this case, CARB’s cyclic net zero policy overlooks the significant carbon sequestration potential of natural landscapes while hiding the true environmental impact of virgin food-based renewable diesel (when production is expanded globally to merely serve the California fuels market). While petroleum extraction has huge problems of high-GHG flaring events and unregulated methane leakage, in addition to abandoned wells, taking farmland out of food production or removing a forest that had been a carbon sink is not a cost-effective or efficient method to reduce transportation CO<sub>2</sub> GHGs. According to Statas Advisors in 2022, the amount of CARB LCFS credits combined with Federal credits is \$3.32 per gallon subsidization. (5)”

**Response:** The comment provides an opinion on the potential environmental impact of the CARB's net zero policy but does not raise issues related to the adequacy of the EIA. Refer to Chapter 4.0, "Impact Analysis and Mitigation Measures," of the Draft EIA and Chapter 3.0, "Impact Analysis and Mitigation Measures," of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS. Please also refer to Master Response 2.

**15.1-239-6:** The commenter states, "1. Resource Scarcity and Sustainability: Two refineries in Contra Costa, Marathon and Phillips 66, plan to produce a total of 1.5 billion gallons of renewable diesel annually, mainly using virgin food oils such as soy, despite claims of intending to use waste oils. Considering the competitive global demand for limited waste oil feedstocks, the low oil yield from soybeans, only 57 gallons per acre per year (4) and the potential diversion of U.S. soybeans or the exploitation of virgin lands in South America, a pertinent question arises (3):

How does the California Air Resources Board (CARB) justify the certification of renewable diesel derived from virgin food oils as a low-carbon fuel eligible for substantial subsidies, despite the pressing issues of resource scarcity, food security, and sustainability concerns?"

**Response:** Please refer to Master Response 2. The comment does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment, and no further response is needed.

**15.1-239-7:** The commenter states, "2. Arbitrary Tailpipe CO2 Emissions Discount: Given that tailpipe CO2 emissions account for 70-80% of the total lifecycle greenhouse gases content for both petroleum and renewable diesel, one might wonder:

How does the California Air Resources Board (CARB) justify the Low Carbon Fuel Standard's tailpipe CO2 greenhouse gas exemption allowance for renewable diesel produced from virgin food oils, which ideally should be reserved for wastebased feedstocks that would otherwise generate high-GHG methane in landfills."

**Response:** Please refer to Master Responses 2 and 5.

**15.1-239-8:** The commenter states, "3. Inaccurate Carbon Sequestration Claims: Consider that a mature forest can accumulate several hundred tons of carbon per acre over a century, compared to the mere yield of only 57 gallons of soybean oil per acre used for biofuel feedstock and combusted annually, but never sequestered. (5)

4. Given this (and without needing to consider the industrial-scale application of fertilizers and petrochemical herbicides needed for growing genetically-modified refinery soybean oil feedstock) one must question:

How does the California Air Resources Board (CARB) justify the "75%" carte blanche tailpipe CO<sub>2</sub> emissions exemption allowance for renewable diesel, in light of the fact that while there is marginal carbon sequestration on an annual basis, over an entire century, soybean cultivation for biofuels results in absolutely no carbon sequestration (as forested lands)?"

**Response:** Please refer to Master Responses 2 and 5.

**15.1-239-9:** The commenter states, "5. CARB's Misplaced Priority: CARB's heavily subsidized support for using virgin food oils as feedstock for renewable diesel overlooks the key advantage of subsidizing the conversion of waste oils to renewable diesel: the elimination of high-GHG landfill methane emissions. Therefore, one might ask:

How does CARB reconcile its subsidy allocation for renewable diesel derived from virgin food oils, considering there is no landfill methane diversion benefit as there is with waste oil?"

**Response:** Please refer to Master Responses 2 and 5. The LCFS incentivizes the use of waste-derived biofuel. As described on page 25 of the Draft EIA, renewable diesel and biodiesel may both be produced from various non-petroleum renewable sources. The comment does not raise issues related to the adequacy of the EIA. No changes to the EIA are required in response to this comment, and no further response is needed.

**15.1-239-10:** The commenter states, "6 Renewable Diesel Refinery Emissions and Higher Per Barrel Carbon Intensity: The Environmental Impact Reports (EIRs) for the Contra Costa County refineries' shift to renewable diesel production reveal that the process nearly doubles the hydrogen requirements and CO<sub>2</sub> greenhouse gas emissions per barrel compared to the two refineries' traditional heavy petroleum diesel. Given this information:

How does CARB justify disregarding renewable diesel's substantial increase in refinery-level per barrel hydrogen needs and per barrel carbon intensity, compared to during the refineries' previous petroleum refining operations?"

**Response:** Please refer to Master Responses 2 and 5.

**Comment Letter 15.1-240**

2024/08/27

Lauren Gallagher

**15.1-240-1:** The commenter states, “Allowing biomethane book-and-claim accounting for fossil fuel-based hydrogen production perpetuates harm in environmental justice communities.”

**Response:** With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**15.1-240-2:** The commenter states, “Removing fossil jet fuel from the program sends a bad message to polluting airlines, and the workers and communities they harm.”

**Response:** The potential air quality and GHG emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. As discussed in Chapter 3.0 of the Recirculated Draft EIA, the short-term construction-related and long-term operational-related impacts on air quality would be significant and unavoidable with implementation of the Proposed Amendments. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment.

**15.1-240-3:** The commenter states, “CBE recognizes that the changes made to sections 95482(1) and 95488(d)(1) attempt to remedy the overrepresentation of renewable diesel in the program, at nearly 40% of the total program in the 2024 quarter one LCFS Reporting Tool (LRT).<sup>1</sup> Unfortunately, as explained at length below, the proposed twenty percent company-wide limit on canola and soy based biodiesel crediting, and Executive Officer discretionary pathway closure option are too opaque for companies to implement, for CARB to enforce, or for community stakeholders to decode. Further, these unclear and untimely changes will not correct the program’s outstanding renewable diesel credit glut. Ultimately, these changes fail to correct the LCFS as it applies to biodiesel, and thereby perpetuate pollution harms to fence-line communities surrounding biofuels refineries.

To move forward in addressing biofuels’ climate and health problems, CBE echoes prior ask for CARB to place a cap on credits for crop-based biofuels at 2020 levels and conduct a risk assessment of biofuel feedstocks. In lieu of the changes as they are proposed, this measure would more clearly and readily serve CARB’s statutory mandate to achieve maximally technologically feasible and cost-effective emission reductions by boosting incentives for truly clean, scalable technologies including electrification. In addition, a cap at 2020 levels will be critical to begin addressing the harms of biofuel refining for fence-line communities, as well as the expansive impact of biofuels on global deforestation, and food security risks.”

**Response:** Please refer to Master Response 2. With regards to the comment related to environmental justice, environmental justice is not an issue required to be analyzed in the EIA under CEQA. No further response related to environmental justice is required. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration. No further response is required.

**15.1-240-4:** The commenter states, "By taking credit for emissions reductions that should be credited to the federal RFS, CARB is violating AB 32's additionality requirement and inflating emission reduction estimates that will dilute the potential effect of a twenty percent soy and canola based biofuels limit."

**Response:** Please refer to Master Responses 2 and 5.

**15.1-240-5:** The commenter states, "Changes to the LCFS do not support a timely or effective reduction in incentives for biofuels refining. LCFS biofuel incentives drive rapid increases in renewable diesel production in California, largely occurring at oil refineries. As such, the LCFS is undermining the cleanup of pollutants in highly impacted refinery communities."

Refinery communities have been living with the racist impacts of fossil fuel pollution for a century and are deeply, and personally aware of the need to phase out polluting refineries. As retired oil refineries come back online for biofuels, refinery communities are again being asked to disproportionately bear the burden of pollution and safety risks from biofuel refinery conversion."

**Response:** The EIA made a rigorous effort to evaluate significant adverse impacts and beneficial impacts of the reasonably foreseeable compliance responses that could result from implementation of the Proposed Amendments. Chapter 4.0 of the Draft EIA takes a programmatic approach in assessing the types of adverse environmental effects that could occur for each resource area identified in Appendix G of the CEQA Guidelines. "The degree of specificity required in an [EA] will correspond to the degree of specificity involved in the underlying activity that is described in the [EA]." (CEQA Guidelines, § 15146.) The EIA discloses the reasonably foreseeable compliance responses associated with the Proposed Amendments may include construction and operations of new facilities related to renewable diesel and biofuel production, and the Recirculated EIA discusses potential air impacts on pages 52 to 54; however, attempting to predict decisions by entities regarding the specific location and design of infrastructure, source and production of materials, and other activities undertaken in response to implementation of the Proposed Amendments would be speculative (if not impossible) at this early stage, given the influence of other business and market considerations in those decisions. As a result, this Draft EIA generally does not analyze site-specific impacts when the location of future facilities or other infrastructure changes are speculative. CARB's analysis disclosed impacts of potential production facilities to the extent reasonably foreseeable at this time.

CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such

measures is under the purview of jurisdictions with local or state land use approval and/or permitting authority. New or modified facilities in California would typically qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation, once a biofuel refining conversion project is actually proposed, would be identified during the environmental review by agencies with project-approval authority.

**15.1-240-6:** The commenter states, “Biofuel refining may require more intensive use of hydrogen compared to fossil fuels, which can cause more frequent flaring hazards.”

**Response:** Please refer to Response to Comment 15.1-240-5.

**15.1-240-7:** The commenter states, “Under this mandate, CARB should further study the direct and indirect effects of biofuels on refinery communities so that there is adequate support for transparent and accountable rulemaking.”

**Response:** Please refer to Response to 15.1-240-3 and 15.1-240-5.

**15.1-240-8:** The commenter states, “These changes prolong and promote the existing harms of biofuels production by providing for an ineffective and untimely limit on canola and soy-oil based biodiesel. Further, including co-processing of biomass and petroleum feedstocks in the applicable definition of credit-generating renewable diesel will encourage major oil producers to further entrench communities who already experience the harms of oil refining with the expansion into biofuel refining co-processing with petroleum. Again, AB32 requires CARB to act in a manner that does not interfere with efforts to reduce toxic air contaminants, maximizes benefits with minimal costs, and is equitable and does not disproportionately impacting low-income communities. The experiences at Phillips 66 Rodeo, Marathon Martinez, and AltAir Paramount refineries provide examples of how biofuel refining extends existing pollution and creates new harms in disadvantaged communities. The clear evidence that producing biofuels at oil refineries can create serious, under-studied health and safety risks for low-income communities, communities of color, and communities heavily impacted by air toxics undoubtedly indicates that CARB should be acting to rein in biofuels crediting that incentivizes expanded production.”

As set out above, the twenty percent per company limit does not limit the expansion of the market, and as oil refining is phased down in line with the 2022 scoping plan, biofuels credits will incentivize oil refineries to pivot and continue operation as biofuels refineries. Further, the twenty percent limit does nothing to discourage the uptake of other biofuels such as tallow and cooking oil-based biofuels. Environmental justice communities, such as Martinez, Rodeo, and Paramount, as well as new communities where biofuels production expands will bear the burden of the little studied health and safety impacts of biofuels refining. As such, CARB’s twenty percent limit does not adequately or equitably minimize costs to Californians and will ultimately prolong the disproportionate health and environmental burdens faced by refinery communities.”

**Response:** Please refer to Response to 15.1-240-3 and 15.1-240-5.

**15.1-240-9:** The commenter states, “As explored in section one, subsection d of this comment, dual incentives under the federal RFS and LCFS have resulted in a trend towards concentrating biofuels production and use in California. Oil refineries are generally located in areas with higher pollution burdens that are largely comprised of low-income households and people of color, due in part to a history of racist housing discrimination. As biofuel producers concentrate in California because of reshuffling incentives not addressed by changes to include a twenty percent cap, oil refineries come back online as biofuels refineries and California’s fence-line refinery communities will face new pollution burdens and risks despite California’s much needed commitment to reduce the use and impacts of fossil fuel. To comply with additionality requirements under California law<sup>41</sup> and ensure the program is administered in a manner that does not disproportionately impact low-income communities, CARB should correct the program to adequately account for reshuffling under RFS.”

**Response:** Please refer to Response to 15.1-240-3 and 15.1-240-5.

**15.1-240-10:** The commenter states, “The immense amount of pollutants from diverse sources associated with biofuels refining conflicts with CARB’s statutory requirement to complement efforts to attain air quality standards and to avoid disparate harms in low income communities and communities of color. The twenty percent limit has no deterrent power for the expansion of companies who elect to convert to biofuels production as oil and gas is phased down under the Scoping Plan. As such, this rule change fails to satisfy CARB’s statutory requirements under AB 32. As previously recommended, CARB should implement a cap on biofuels credits. A cap on the market for biofuels credits could provide a deterrent effect on the incursion of biofuels conversions, while CARB and Air Quality Management Districts otherwise address the issue of biofuel related pollution affecting fence-line communities.”

**Response:** Please refer to Master Response 2. There are currently no formal requirements or procedures to evaluate potential environmental justice impacts under CEQA. The Draft EIA and Recirculated Draft EIA focused on the analyses of potentially significant environmental impacts associated with the implementation of the LCFS. The potential air quality impacts associated with the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. As discussed in Chapter 3.0 of the Recirculated Draft EIA, the short-term construction-related and long-term operational-related impacts on air quality would be significant and unavoidable with implementation of the LCFS. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment.

**15.1-240-11:** The commenter states, “Finally, these shortcomings, including underestimating LUC changes, will adversely affect fence-line refinery communities.”

**Response:** Please refer to Response to 15.1-240-3.



**15.1-240-12:** The commenter states, “By focusing its LUC analysis on U.S. soy feedstock production shocks, CARB is underestimating the carbon intensity of the feedstocks that this proposal will incentivize. Since CARB continues to provide credits to biofuels sourced from imported crop-based feedstocks, the proposal’s failure to thoroughly evaluate LUC by region produces indefensibly inaccurate carbon intensity estimates. Underestimation of the LUC effects of biofuels can have catastrophic consequences. In South America, deforestation linked to soybean farming is destroying critical tropical forests like the Gran Chaco Forest in Argentina and Paraguay, which is one of the biggest carbon sinks in the world, provides a critical habitat for thousands of plant and animal species, and is an ancestral home to many Indigenous communities. These crop-based feedstocks have numerous harmful effects, including climate impacts from deforestation, loss of indigenous lands, and increased food insecurity. The lack of effective changes to restrict crop-based biofuels will accelerate these effects. It is therefore especially important for CARB to accurately estimate the LUC effects of crop-based feedstocks.”

**Response:** Please refer to Master Response 2.

**15.1-240-13:** The commenter states, “If CARB provided modeling analysis that reflected a region-specific production shock, it would more accurately account for domestic economic factors and trade dynamics to arrive at a carbon intensity estimate that better aligns with the true climate impacts of feedstocks. CARB should substantively correct carbon intensity valuation by studying regional producers land use change effects, and incorporating findings into regional carbon intensity valuations.”

**Response:** Please refer to Master Response 2.

**15.1-240-14:** The commenter states, “With inaccurate LUC values based on region, CARB will continue to underestimate the climate harm of crop-based fuels and thereby over-incentivize biofuels which will drive over-crediting and increases in harms for fence-line communities. The asserted climate benefits of the proposal are based in part on the carbon intensity advantages assigned to biomass-based diesel. Concerningly, CARB’s analysis is rooted in an incomplete and inaccurate evaluation of the climate impacts of biomass-based diesel. Biomass-based diesel in California is increasingly produced from virgin vegetable oil, primarily soybean oil, and producers are starting to import soybean oil from South America. The Environmental Protection Agency (“EPA”) technical documents comparing LUC models shows that of the models CARB used to calculate LUC effects, only the GTAP model found that displacing fossil diesel with soybean diesel led to lower greenhouse gas emissions, while the other two models found that soybean biodiesel could emit *more* greenhouse gas than fossil diesel due to deforestation. This EPA publication suggests, at the very least, that the GTAP model may be seriously underestimating the land use change effects of crop-based feedstocks. LUC changes continue to include the GTAP model and the AEZ-EF model, the addition of regions of analysis did not change the LUC values in Table six.

One of the most important reasons to accurately estimate land use change effects is that these estimates are used in Tier 2 fuel pathway applications to calculate carbon intensity values for

crediting biofuels. In this context, underestimating a land use change value results in over-crediting a biofuel project. Further, as explained above, the Executive Officers discretionary ability to amend LUC values does not correct LUC undervaluation. Underestimating LUC effects inflates biofuels crediting, and credits for biofuels support costly biofuel production and investment in biofuel refinery conversions. As explored at length in section one, subsection e of this comment, over incentivizing biofuels has an adverse impact on fence-line refinery communities who bear the burden of direct and indirect pollution from biofuels refining.

In sum, crop-based biofuels present serious, likely underestimated, direct and indirect land use change risks, as well as impacts to fence-line communities and the 15-day changes will not reduce these risks. Echoing CBE's prior asks, one basic way CARB should address land use change risks is by providing more thorough analysis for fuel pathway applications."

**Response:** Please refer to Master Response 2.

**15.1-240-15:** The commenter states, "While hydrogen *can* be a zero-emission energy carrier at its point of use, there is an array of hydrogen production methods with a range of potential local climate emissions. Hydrogen produced from fossil fuels, known as grey hydrogen, involves using steam reformation of natural gas to create hydrogen. Steam reformation is both energy intensive and highly polluting. For example, Shell Energy has had two certified pathways for production of fossil-based hydrogen produced from natural gas via steam methane reformation at facilities in Wilmington and Carson, communities with already exceptionally high fossil fuel pollution. Shell uses book-and-claim accounting to claim the environmental attributes of biomethane derived from manure digesters in Minnesota; Minnesota biomethane does not have to actually reach California. Under this scheme, CARB has certified Shell to earn LCFS credits using carbon intensity values of -147 and -152 gCO<sub>2</sub>e/MJ—these low carbon intensity values make the pathway more valuable than most electric vehicle pathways. Shell is earning highly valuable LCFS credits to produce fossil-based hydrogen in deeply burdened environmental justice communities."

**Response:** The comment provides an opinion on potential local climate emissions from hydrogen production. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment. Refer to Chapter 4.0, "Impact Analysis and Mitigation Measures," of the Draft EIA and Chapter 3.0, "Impact Analysis and Mitigation Measures," of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS. Please also refer to Response to 15.1-240-3 regarding environmental justice communities.

**15.1-240-16:** The commenter states, "Changes throughout the program removing fossil jet fuel are a substantial backslide in policy. In such a hard to decarbonize sector, it is essential that the cost of pollution is adequately accounted for. Removing fossil jet fuel from the program fails to internalize the substantial emissions impact of aviation, and its pollution impacts on airport workers, and communities surrounding airports. Further, the use of fossil jet fuel is not without consequences for the communities and workers who work and live in and around airports. Communities surrounding airports and airport workers have increased hospital admissions for

respiratory disorders including asthma, and chronic bronchitis, as well as cardiovascular issues such as heart disease, and stroke. Fossil jet fuel deficit generation could provide an important platform for investing in technology development to decarbonize air travel and remedy its impacts while also appropriately compensating for a significant sector of California's greenhouse gas emissions."

**Response:** The potential air quality and GHG emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, "Impact Analysis and Mitigation Measures," of the Recirculated Draft EIA. As discussed in Chapter 3.0 of the Recirculated Draft EIA, the short-term construction-related and long-term operational-related impacts on air quality would be significant and unavoidable with implementation of the Proposed Amendments. However, the impacts on GHG emissions would be beneficial because the comparatively small level of GHG emissions related to construction and operation of facilities associated with the compliance responses would be offset by the reductions in GHG emissions from the implementation of the Proposed Amendments. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment.

**Comment Letter 15.1-244**

2024/08/27

Janet Cox, Will Brieger, and Daniel Chandler

**15.1-244-1:** The commenter states, “Any increase in biofuels made from crops results in sure destruction of more natural land. California’s Low Carbon Fuel Standard credits play a major role in the planet’s deforestation crisis.”

**Response:** Please refer to Master Response 2.

**15.1-244-2:** The commenter states, “California’s LCFS program is a large contributor to this forest destruction made worse by its role as a model for other state LCFS programs and for federal RFS program changes expected in 2025 to adopt the LCFS carbon intensity approach.”

**Response:** Please refer to Master Response 2.

**15.1-244-3:** The commenter states, “c. The LCFS credits encourage greater production of corn ethanol and hence greater production of corn, a crop linked to many environmental problems.

- i. Corn already accounts for around 28 percent of US harvested acreage. Corn production is heavily-subsidized through the federal Farm Bill, despite the fact that hardly any corn produced in this country is used to feed people: 45 percent is used to produce ethanol, 40% is used to produce feed grains for animals, and 10% or more is exported. Astonishingly, half the chemical fertilizer consumed in the US is used to grow corn that is not used to feed people.
- ii. Corn uses more irrigation water than any other crop.
- iii. Corn is produced on large monoculture farms that are degrading soil quality and reducing biodiversity in rural areas, depriving farms of the many crucial services biodiversity provides including pollination, pest control and improving air and ground water quality.

d. The misguided Treasury decision regarding tax credits for corn ethanol-based SAF, if allowed to hold, will be even more damaging to the environment if CARB fails to limit the amount of distiller’s corn oil that can qualify for LCFS credits”

**Response:** The comment provides an opinion on the environmental impacts associated with cultivation of corn, but does not raise issues related to the adequacy of the EIA. Refer to Chapter 4.0, “Impact Analysis and Mitigation Measures,” of the Draft EIA and Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA for discussions of environmental impacts associated with implementation of the LCFS. Please also refer to Master Responses 2 and 4.

**15.1-244-4:** The commenter states, “Recognition of the need to protect and restore natural forests, grasslands and wetlands should propel CARB to eliminate crop-based biofuel credits. A small fraction of the freed up land could be used to provide an equivalent amount of transportation energy from solar power and, the rest of the land could be used for growing crops to feed people or rewilding.”

**Response:** Please refer to Master Response 2.

**15.1-244-5:** The commenter states, “a. Currently, the tailpipe emissions of crop-based fuels are disregarded when calculating their carbon intensity. It is assumed that tailpipe carbon emissions are merely returning carbon to the atmosphere that was previously sequestered by the plant as it grew, hence they cancel each other out. But this totally ignores the harm tailpipe emissions have on people living and working near large highways and city streets. Electric vehicles on the other hand have no harmful tailpipe emissions since they are powered by batteries not fuel combustion.

- i. The benefit from a plant’s removal of carbon dioxide from the atmosphere as it grows on a farm does not cancel out the harm of a vehicle emitting carbon dioxide (with other pollutants) as it is driven on a congested city road in a densely populated area.
- ii. CARB should give some weight to the harm alternative combustion fuels create. While there is much uncertainty associated with their CI values there is no uncertainty about the harm tailpipe emissions from all combustion fuels have on people and the environment. Clean electricity offers a solution for both global warming and respiratory health. The CI of combustion fuels should be weighted more heavily to adjust for this problem.”

**Response:** Please refer to Master Responses 2 and 4.

**Comment Letter 15.1-246**

2024/08/27

Henry Stern, Josh Becker, Catherine Blakespear, Ben Allen, Dave Min, Al Muratsuchi, Miguel Santiago, Tina McKinnor, Damon Connolly, Monique Limón, and Caroline Menjivar

**15.1-246-1:** The commenter states, “Over the past year, CARB staff have discussed the concern that aviation jet fuels are a major contributor to climate change. California’s aviation footprint is among the largest in the world and rising. A 2021 inventory of statewide aviation emissions estimates that California’s aviation sector generated approximately 34 million metric tons of CO<sub>2</sub> emissions in 2018. Though it would advance both Senate Bill 32 and Clean Air Act goals, the aviation sector until now has been exempt from regulations, even on the jet fuel they burn in California during intrastate flights.

During this comment period, we have seen robust public participation of airport workers, frontline communities of color, environmental advocates, and communities in the pathways of some of the nation’s busiest airports. Respiratory illnesses like asthma and chronic obstructive pulmonary disease (COPD) are much more common among airline workers and communities of color impacted by airports. Thousands of Californians have weighed in during CARB’s public process, overwhelmingly supporting holding airlines and jet fuel producers accountable for their climate, air quality, and public health impacts.”

**Response:** There are currently no formal requirements or procedures to evaluate potential environmental justice impacts under CEQA. The Draft EIA and Recirculated Draft EIA focused on the analyses of potentially significant environmental impacts associated with the implementation of the LCFS. The potential air quality and GHG emissions impacts associated with the changes to the Proposed Amendments, including the removal of fossil jet fuel for the list of transportation fuels subject to the LCFS, are discussed in Chapter 3.0, “Impact Analysis and Mitigation Measures,” of the Recirculated Draft EIA. All other resources areas are adequately analyzed under the Draft EIR. Please also refer to Master Response 4 with regard to air quality modeling. The comment does not raise issues related to the adequacy of the EIA and no edits to the EIA are required in response to this comment.

**Comment Letter 15.1-255**

2024/08/22

Christopher Kelstrom

Shasta County Board of Supervisors

**15.1-255-1:** The commenter states, “I urge you to consider allowing landowners to participate in the LCFS program as they are key partners in any successful long-term solution that scales up forest management successfully in California. Excluding them from the program will ultimately result in higher fuel loads on those lands, thus a heightened fire risk and ultimately higher emissions if/when there is a wildfire.

In addition, the phrase "forest stand improvements" should not be eliminated from the language as thinning programs are exceedingly important treatments that enhance forest health as well as reduce fire risk. Also, restricting biomass generated from "clear cuts" should be considered eligible if extracted in compliance with the California Forest Practice Act.”

**Response:** The wildfire impacts associated with reasonably foreseeable compliance responses related to the Proposed Amendments are discussed in pages 138 and 139 of the Draft EIA. The changes to the Proposed Amendments have not shown any new or any substantial increases in the severity of wildfire impacts compared to those considered in the Draft EIA. Therefore, no changes to the EIA are required in response to this comment, and no further response is needed.

## **2. Individual Comments and Responses from the Second 15 Day Comment Period**

### **Comment Letter 15.2-169**

2024/10/16

Jeremy Martin

Union of Concerned Scientists

**15.2-169-1:** The commenter states, “CARB initially justified these subsidies because California dairies were not otherwise required to mitigate their own methane pollution. As we have discussed in previous comments, it is essential that CARB initiates a rulemaking process outside of the LCFS to directly regulate dairy methane emissions as soon as possible. The last-minute addition of this consequential grandfathering provision in the LCFS amendment inappropriately preempts the discussion of how best to structure regulations on dairies by shielding a large number of potentially regulated parties from the impact of the regulation before that important regulatory process has even started. The grandfathering provision also locks in this lavish subsidy for many years after the technical justification has ended. This means that a substantial share of the credits issued by the LCFS will not reflect real emissions reductions based on up-to-date lifecycle analysis.”

**Response:** The structure of a potential future regulation on dairy methane emissions is outside the scope of the Proposed Amendments to the LCFS. The removal of the language from section 95488.9(f) regarding eligibility of avoided methane crediting periods with relation to a potential future regulation on dairy methane emissions does not create a conflict with real emissions reductions supported under the program. Such a regulation does not exist at this time, and LCFS crediting remains one of the only drivers to incentivize capture of methane from dairy operations. The Proposed Amendments provide investment certainty for development and long-term operation of digesters to ensure the State does not backslide on our methane reduction progress. Please also refer to Master Response 1.



**Comment Letter 15.2-170**

2024/10/16

Orran Balagopalan

Leadership Counsel for Justice and Accountability

**15.2-170-1:** The commenter states, “Both the original Draft Environmental Impact Analysis (“DEIA”) and the Recirculated Draft Environmental Impact Analysis (“Recirculated DEIA”) omitted *any* analysis of the environmental impacts of herd expansion and included an insufficient, cursory analysis of the impacts associated with digesters.”

**Response:** Please refer to Master Response 1 and Response to Comment R14-7.

**15.2-170-2:** The commenter states, “Instead of supplementing its deficient environmental analysis, CARB issued a second set of modifications<sup>1</sup> that provide an even greater incentive than the previous versions of the Proposed Amendments to expand herd sizes and install anaerobic digesters at factory farms.”

**Response:** Please refer to Master Response 1 and Response to Comment R14-7.

**15.2-170-3:** The commenter states, “CARB contends that “no additional environmental analysis or recirculation of the EIA is required.” CARB is wrong. CEQA requires lead agencies to recirculate an environmental impact report when the agency makes changes to the project that substantially increase the severity of an environmental impact previously considered or a new significant environmental impact would result from the project. Pub. Res. Code § 21092.1; 14 Cal. Code Regs. § 15088.5; *Laurel Heights Improvement Ass’n v. Regents of Univ. of Cal.* (1993) 6 Cal.4th 1112, 1130; *Western Placer Citizens for an Agricultural & Rural Environment v. County of Placer* (2006) 144 Cal.App.4th 890, 899-903.”

**Response:** Under Section 15088.5 of the State CEQA Guidelines, a lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087, but before certification. Significant new information includes a new significant environmental impact that would result from the project, a substantial increase in the severity of an environmental impact would result. (CEQA Guidelines, § 15088.5(a).) Recirculation is not required, however, where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR. (CEQA Guidelines, § 15088.5(b).)

The changes proposed within the second 15-Day Package merely clarify, amplify, or make insignificant the modifications in the EIR, so recirculation of the EIA was not necessary. The Draft EIR and Recirculated EIR adequately analyzed and disclosed the impacts of the Proposed Amendments. To the extent this comment about recirculation is based on the other comments about herd size increases, herd size is not a reasonably foreseeable compliance response to the Proposed Amendments. Please refer to Master Response 1.

**15.2-170-4:** The commenter states, “Each of the additional modifications discussed herein send a clear, stronger signal than prior iterations of the proposed regulation to factory farms to increase their herd sizes and install anaerobic digesters in the near-term to take advantage of the lucrative benefits provided by the LCFS, many of which will no longer be available if pathways are certified too late. The greater incentive to expand herds and install digesters will undoubtedly increase the severity of the significant and unavoidable air quality, water quality, greenhouse gas, and public health impacts that CARB acknowledges, and those that it does not. CARB must recirculate the DEIA and conduct a comprehensive analysis of the environmental impacts caused by the substantial increase in herd expansion and anaerobic digesters, particularly in the Central Valley communities that already bear a substantial pollution burden.”

**Response:** Please refer to Master Response 1 and Response to Comment R14-7.

**Comment Letter 15.2-174**

2024/10/16  
Nina Robertson  
Earth Justice

**15.2-174-1:** The commenter states, “In fact, the revisions double down on policies that entrench polluting practices and delay critical reforms.”

**Response:** Please refer to Master Response 1.

**15.2-174-2:** The commenter states, “Taken together, Proposal’s biofuels provisions reward environmentally damaging agricultural practices, drive up food prices, and create a perverse incentive to expand forest clearing.

The LCFS should not be designed to effectively pave the way for more deforestation, global hunger, and indeed higher greenhouse gas emissions.”

**Response:** Please refer to Master Response 2.

**15.2-174-3:** The commenter states, “By offering up to three 10-year crediting periods, CARB is locking California into decades of reliance on harmful methane production practices.”

**Response:** Please refer to Master Response 1.

**15.2-174-4:** The commenter states, “With each turn on this issue, the Proposal has ignored calls from not only affected community members and advocates but also its own Board Members to actuate effective policies that do not incentivize further consolidation and gift polluters with extravagant incentives rather than treating the emissions on par with other methane-emitting sources. CARB should shift the LCFS from a program predicated on factory farms being paid for their pollution to a program requiring that they clean up their own mess—the same approach that is taken for wastewater, landfills, and even oil and gas operations.”

**Response:** Please refer to Master Response 1 and Response to Comment R14-7.

**15.2-174-5:** The commenter states, “For numerous reasons, the Proposal’s treatment of hydrogen is thwarting a just transition off fossil fuels. First, the definition of “renewable hydrogen” in the Proposal and the accompanying notice of availability are misleading because CARB does not explain that the definition of “renewable hydrogen” includes hydrogen derived from reformation of fossil methane paired with book-and-claim biomethane credits. CARB allows this dirty hydrogen to be called “renewable” even though its production emits harmful pollutants and has dubious climate benefits.”

**Response:** Please refer to Response to Comment R22-29.

**15.2-174-6:** The commenter states, “Second, CARB’s allowance of book-and-claim accounting for fossil gas-derived hydrogen will lock in dirty hydrogen production for decades to come and

kneecap growth of truly green hydrogen in California. With biomethane receiving the excessively lavish subsidies described above, its unbundled environmental attributes will be readily available to greenwash dirty hydrogen under the Proposed Amendments. Supercharging more dirty hydrogen production in California means more pollution in already overburdened communities.”

**Response:** Please refer to Response to Comment R22-29 and Master Response 4.

**15.2-174-7:** The commenter states, “Fifth, the provision allowing three-quarter book-and-claim crediting of low-carbon intensity electricity for electrolytic hydrogen and direct air capture projects—which will likely result in increased greenhouse gas emissions—has been further weakened. CARB has walked back the limitation to electrolytic hydrogen and is now proposing to allow book-and-claim provisions for all types of hydrogen, including hydrogen that uses fossil methane as a feedstock.”

**Response:** Please refer to Response to Comment R22-29.

**Comment Letter 15.2-183**

2024/10/18

James Duffy

**15.2-183-1:** The commenter states, “Crop-based biofuels that may not reduce GHG emissions compared to gasoline and diesel, do not statistically reduce criteria pollutant emissions in new technology diesel engines, and very likely lead to tropical deforestation and increased hunger amongst the most food insecure populations of the world,”

**Response:** Please refer to Master Responses 2 and 5.

**Comment Letter 15.2-194**

2024/10/18

Sandra Franco

Sustainable Advanced Biofuel Refiners Coalition

**15.2-194-1:** The commenter states, “As SABR Coalition’s prior comments explained, U.S. soybean farmers continue to adopt precision agricultural technologies and practices that increase productivity and yield, enhance resilience to environmental changes, and reduce GHG emissions.<sup>12</sup> These sustainable practices provide GHG emission reductions benefits that will be lost if crop-based fuels are unduly limited. Restricting this markets through regulation sends the wrong policy signals, creating a disincentive to farmers to continue to innovate and further invest in sustainable practices. This appears to have been ignored by CARB.”

**Response:** Please refer to Master Response 2.

**15.2-194-2:** The commenter states, “Where California has an outsized influence on the national market, as most renewable diesel produced in the U.S. is targeted for California, SABR Coalition requests that CARB be mindful of how biofuel regulatory measures taken by California, combined with federal regulatory measures, can create market distortions on the entire U.S. market. For example, sustainable aviation fuel produced from imported used cooking oil that comes online in California means that a gallon of soy biodiesel goes offline somewhere else in the country. This effectively results in an increase in GHG emissions since biodiesel is the lowest cost, lowest carbon biomass-based diesel.”

**Response:** Please refer to Master Response 2.

**15.2-194-3:** The commenter states, “We found no analysis of the impacts of the proposed cap or the expansion to include sunflower oil, which has different market considerations than soybean oil and canola oil. As noted above, we believe the proposed cap would impact biodiesel producers more than renewable diesel producers, yet CARB conducted no environmental review of these potential implications.”

**Response:** Please refer to Master Response 2.

**15.2-194-4:** The commenter states, “Any claimed risk of increased use of crop-based feedstocks for biodiesel has not been established for soybean or canola oils, much less to expand it to sunflower oil (or any additional feedstocks). Indeed, real world data and science indicates that claimed risk of deforestation and adverse land use change cannot be attributed to biodiesel production as a result of the LCFS. In fact, there is reason to believe such a limitation would increase GHG emissions and other environmental harms as a result of lost biodiesel volumes.”

**Response:** Please refer to Master Response 2.



**Comment Letter 15.2-204**

2024/10/18

Mary Elizabeth

**15.2-204-1:** The commenter states, “The increased time for phasing out fossil fuel hydrogen production credits is prolonging the use of fossil fuel and endangering our air quality and climate with further greenhouse gas emissions, including nitrogen oxides that produce ozone a potent trigger to asthmatic episodes. Credits for hydrogen produced from fossil gas should be stopped immediately.”

**Response:** Please refer to Response to Comment R22-29 and Master Response 4.

**15.2-204-2:** The commenter states, “The continued allowance of credits for renewable methane not only affects communities far from California but go against CARBs CEQA recommendations: As a general rule, offsets purchased in the general area of the Project are preferred if onsite mitigations are insufficient as shown in the CARB Scoping Plan GHG Reduction and Mitigation Hierarchy shown on the right.”

**Response:** Please refer to Master Responses 1 and 5.

**15.2-204-3:** The commenter states, “Statements of overriding consideration have harmed disadvantaged communities and the same will occur if credits for fossil gas hydrogen and “renewable credits” mitigations are allowed to continue. As a member of the Stockton AB617 Steering Committee I am well aware of the regulatory and mitigation environment associated with the implementation of our CERP. As the Delta-Sierra Group Conservation Chair I am well aware of the disproportionate harms that have occurred in Stockton over many years and continues today with findings of overriding consideration that affect disadvantaged communities in Stockton, CA.”

**Response:** Please refer to Response to Comment R22-29 and Master Response 4.



**Comment Letter 15.2-227**

2024/10/18

Jonathan Snoeberger

Louis Dreyfus Company

**15.2-227-1:** The commenter states, “However, these updates did not address the fundamental issues with the 20 percent vegetable oil cap. Namely, this cap is not based on any technical or scientific analysis; the calculated 20 percent limit is based on incomplete data; and the cap fails to promote true environmental benefits.”

**Response:** Please refer to Master Response 2.

**15.2-227-2:** The commenter states, “Firstly, CARB has not provided technical or scientific analysis supporting the 20 percent cap. The published Standardized Regulatory Impact Assessment (SRIA) makes no mention of this cap,<sup>1</sup> while the Initial Statement of Reasons (ISOR) addresses a cap in passing, with the analyzed scenario causing an **increase in fossil fuels and GHG emissions**.”

**Response:** Please refer to Master Response 2.

**15.2-227-3:** The commenter states, “Finally, the 20 percent cap fails to promote true environmental benefits.”

**Response:** Please refer to Master Response 2.

**15.2-227-4:** The commenter states, “With respect to land use change, the displacement of domestically sourced soybean and canola oils promotes the imports of tallows and used cooking oils (UCOs) from countries flagged by environmental groups as suffering from high rates of deforestation and land conversion.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.2-236**

2024/10/18

Jane O'Malley

International Council on clean Transportation

**15.2-236-1:** The commenter states, "Timely fixes are required to address upstream environmental risks associated with crop-based fuel production and inflated carbon intensity values for livestock manure derived biomethane that are compounded by book-and-claim crediting."

**Response:** Please refer to Master Responses 1 and 2.

**15.2-236-2:** The commenter states, "Although both the current and previous 15-day proposals would do little to shift BBD capacity expansion trends, the loosening of the crediting restriction in the September package further weakens the efficacy of the proposed safeguards to prevent rapid expansion of crop-based BBD fuel. Crop-based fuel is associated with uncertain and significant upstream environmental risks including conversion of primary forestland and price volatility of food and feed commodities."

**Response:** Please refer to Master Response 2.

**15.2-236-3:** The commenter states, "We recognize that anaerobic digesters are a strategy to meet statewide methane reduction targets; however, locking in crediting incentives despite regulatory capture requirements is a departure from sound life-cycle assessment methodology and misapplies policy incentives designed for transportation fuels to the agricultural sector."

**Response:** Please refer to Master Response 1 and Response to Comment 15.2-169-1.

**15.2-236-4:** The commenter states, "Environmental justice groups have emphasized the adverse impacts of this accounting practice including a 2021 petition that called on CARB to remove dairy and swine manure eligibility from the LCFS. In the petition, the groups also identified the state's obligation to accurately assess localized pollution impacts associated with alternative fuels and existence of numerous other public funding streams that benefit farmers for installing digester operations such as the Dairy Digester Research & Development Program (DDRDP). Subsequent comments from ICCT and others have underscored the need to update the carbon intensity of biomethane-derived fuel in Tier 1 and 2 emission calculators to "right size" its contribution towards state-wide emission reductions."

**Response:** Please refer to Master Responses 1 and 5.

**15.2-236-5:** The commenter states, "Installing anaerobic digesters at livestock farms is one strategy to comply with the state's SLCP reduction strategy that sets a 40% methane emissions reduction target by 2030 alongside other organic waste diversion requirements.<sup>20</sup> Compared to alternative manure management strategies, digesters are costly to build and have higher methane production rates than practices that utilize solid treatment"

**Response:** The commenter provides an opinion about the use of anaerobic digesters at livestock farms to meet methane emissions reductions targets and a comparison to using digesters compared with solid treatment. The comment does not raise issues related to the adequacy of the Draft EIA and no edits to the Draft EIA are required in response to this comment.

**15.2-236-6:** The commenter states, “CARB’s proposal to lock-in avoided methane crediting for 20 years beyond the end of the crediting period in which binding methane regulations take effect does not appear to support the implementation of alternative manure management strategies as an SLCP reduction strategy. It instead exacerbates existing problems with LCA accounting at livestock digesters with contested localized environmental benefits.”

**Response:** Please refer to Master Response 1 and Response to Comment 15.2-169-1.

**Comment Letter 15.2-243**

2024/10/18

Dallas Gerber

Growth Energy

**15.2-243-1:** The commenter states, “In our previous comments, we reiterated our concerns over the onerous and costly requirements on biofuels producers and farmers, and how CARB’s Economic Impact Analysis (EIA) of the proposal does not discuss the sustainability certification requirement’s financial burden of implementation. In the recirculated EIA, this impact is still not sufficiently addressed. Rather, the EIA acknowledges potential direct and indirect land use change ‘is at least partially (and potentially fully) accounted for by the LUC scores added to crop-derived pathways.’”

**Response:** Please refer to Master Response 2. The EIA is not meant to address purely economic, social, or financial issues associated with the Proposed Amendments. Rather, the purpose of CEQA and the EIA is to fully analyze and mitigate the Proposed Amendments’ potentially significant physical impacts on the environment. As such, comments related to social, economic or financial concerns are outside of the scope of the EIA and not addressed in this response to comments document. However, this comment is acknowledged for the record and has been reviewed by CARB staff prior to returning to the Board for final consideration.

**Comment Letter 15.2-285**

2024/10/24

Joe Jobe

Sustainable Advanced Biofuel Refiners Coalition

**15.2-285-1:** This comment letter was a duplicate to comment letter 15.2-194.

**Response:** Please refer to the response to comment letter 15.2-194.

**Comment Letter 15.2-286**

2024/10/24  
Colin Murphy  
UC Davis

**15.2-286-1:** The commenter states, “The 2nd 15 day package proposes adding corn stover to the list of specified source feedstocks that must supply chain of custody documentation, but are not required to complete a feedstock sustainability certification. Specified source feedstocks are generally those based on wastes and residues, for which there is limited alternative use and are not thought to entail a significant upstream source of GHG emissions. Corn stover, however, has some non-fuel uses and removing stover from fields to use it as a feedstock can have significant GHG impacts. As such, corn stover does not share enough characteristics with actual waste and residue feedstocks to justify inclusion on this specified-source feedstock list.”

**Response:** The Proposed Amendments do not propose to change the LCFS treatment of corn stover as a waste feedstock for purposes of lifecycle analysis. Please refer to Master Response 2 with regard to the proposed sustainability provisions, and Master Response 5 with regard to emissions quantification for biofuels under the LCFS.

**15.2-286-2:** The commenter states, “Corn stover is generally classified as an agricultural residue under most applicable classification systems, however this does not necessarily mean it is free from emissions impacts that should be considered under the LCFS. Corn stover may be used as an animal feed or bedding material, in which case shifting to become biofuel feedstock would cause additional feed or bedding material to be procured to back-fill what is lost. More importantly, however, corn stover is customarily left on most corn fields after the grain is harvested, where it is subsequently re-incorporated into the soil, either via tillage, or in the case of no-till fields, by compaction and other natural processes. The solid carbon embodied in corn stover helps maintain soil organic carbon (SOC) stocks, which would otherwise decline over time as SOC is decomposed by soil microbes. Removing stover to use for biofuel feedstock reduces the rate of SOC accumulation, and can result in long-term reductions in total SOC levels in corn fields. While studies have demonstrated that small amounts of stover can be removed without significantly impacting SOC levels, the amount of stover that can be removed varies widely from field to field due to soil, climate, agronomic, and other factors. A meta-analysis of U.S. field trials in which varying amounts of stover were removed showed this variability, and also found that even relatively low rates of stover removal, <25% of total stover mass, can lead to significant declines in SOC in some fields.”

**Response:** The Proposed Amendments do not propose to change the LCFS treatment of corn stover as a waste feedstock for purposes of lifecycle analysis. Please refer to Master Response 2 with regard to the proposed sustainability provisions, and Master Response 5 with regard to emissions quantification for biofuels under the LCFS.

**15.2-286-3:** The commenter states, “Given that the LCFS is intended to reduce GHG emissions over the full life cycle of a fuel, this loss needs to be carefully considered during the

pathway certification process, higher rates of SOC loss due to stover removal can significantly increase carbon intensity of cellulosic biofuels, or even render the resulting fuel more carbon intensive than the petroleum it displaces. SOC impacts of stover removal must be evaluated on a case-by-case basis, accounting for local conditions. Effective sustainability certification, especially when backed by soil carbon measurements, could mitigate this risk. The categorical exemption of corn stover from the proposed certification requirements means that CI certification of stover-based pathways may lack the necessary evidence to effectively evaluate GHG impacts from its use, thereby undermining the LCFS' ability to achieve long-term life cycle GHG reduction."

**Response:** The Proposed Amendments do not propose to change the LCFS treatment of corn stover as a waste feedstock for purposes of lifecycle analysis. Please refer to Master Response 2 with regard to the proposed sustainability provisions, and Master Response 5 with regard to emissions quantification for biofuels under the LCFS.

**15.2-286-4:** The commenter states, "We note several changes to the proposals around feedstock sustainability certification in § 95488.9 (g), and observe that while these changes generally improve the core functionality of the proposed certification requirements, none address the core issues of sustainability and ILUC risk that we have raised in multiple previous comment letters. Taking 7 into consideration all proposed changes across both the original draft text and both 15 day packages, the LCFS is still inadequately mitigating the significant ILUC risks entailed by the use of biofuels at large volumes. This means that GHG benefits from these fuels as estimated using their pathway certified CI scores likely overestimate actual emissions impacts, and significant sustainability risks remain unaddressed by this rulemaking."

**Response:** Please refer to Master Response 2.

**Comment Letter 15.2-288**

2024/10/24

Sara Olsen

Environmental Defense Fund

**15.2-288-1:** Commenter states, “The proposed removal of the electrolytic requirement makes it more likely that high-emissions hydrogen is produced and sold into the system. The proposed energy density threshold for what is defined as ‘low-carbon hydrogen’ (i.e., less than or equal to 55g/MJ for gaseous hydrogen and 95 g/MJ for liquid hydrogen) equates to 6.6 kgCO<sub>2</sub>e/kgH<sub>2</sub> for gaseous and 11.4 kgCO<sub>2</sub>e/kgH<sub>2</sub> for liquid hydrogen respectively. Despite including end use in the system boundary, these thresholds need to be more rigorous to ensure that LCFS credits do not support the production of pollutive hydrogen.<sup>1</sup>”

**Response:** Please refer to Master Response 2 and 5.

**15.2-288-2:** Commenter states, “Removing the electrolytic requirement and allowing hydrogen produced via fossil fuel pathways to be eligible does stand to significantly increase the GHG emissions associated with hydrogen production. For example, a recent analysis conducted by EDF found that for every fossil hydrogen facility built instead of a renewable hydrogen one, GHG emissions would be expected to increase at least 7-fold – equaling the long-term climate impact of 2-3 natural gas-fired power plants each year.<sup>3</sup>”

**Response:** Please refer to Response to Comment R17-3 with regard to treatment of renewable hydrogen and fossil hydrogen under the Proposed Amendments. The EIA project description discloses information about hydrogen production and reasonably foreseeable compliance responses in response to the Proposed Amendments. Please also refer to Response to Comment R22-37 with regard to book and claim electricity for hydrogen production.



**Comment Letter 15.2-291**

2024/10/24

Gracya Mohabir

California Environmental Voters

**15.2-291-1:** The commenter states, “**The rule does not provide resolution to dairy-adjacent communities seeking an improvement in air and water quality standards.** Staff has shared that some aspects of dairy-related air quality issues must be resolved through local air quality and water quality boards, and we acknowledge that this is a multi-pronged effort. However, we are concerned that the extended lifetime of dairy digesters incentives doesn’t do much to substantially reduce methane at the source. It is also worth noting that this binds California to continued subsidization of major expenses, which will only grow over time as more digesters are built within the optimal window to capitalize upon crediting periods. Testimony from impacted community members during this rulemaking speaks to the profound impact poor air quality has on public health. We can’t lean on an incentives-only, digester-centric approach as chronic health issues persist. Digesters are not without their flaws. Mitigating methane from the state’s biggest contributor should be faced with a comprehensive strategy. We urge the Board to consider a timely rulemaking process for the dairy methane rule in addition to scrutinizing the over-crediting of dairy biogas.”

**Response:** Please refer to Master Response 1. This comment is noted for the record, but is not specific to the LCFS program or the Proposed Amendments.

**15.2-291-2:** The commenter states, “**Lastly, despite broadening the feedstock types included in the updated biomass-based diesel provision, this is not comprehensive enough to solve the major issues.** We remain concerned that relying greatly on these fuels will have substantial impacts to global hunger and deforestation.”

**Response:** Please refer to Master Response 2.

**Comment Letter 15.2-301**

2024/10/16  
Jamie Katz  
Phoebe Seaton  
Leadership Counsel for Justice & Accountability  
Central Valley Defenders of Clean Water & Air

**15.2-301-1:** The commenter states, “This wrongheaded amendment would:

--Create a regulatory framework that creates two classes of livestock operations and effectively suspends the regulatory impact on dairies with digesters for 20 years or more;

--Lock in perverse incentives and windfall profits for the production of methane and concentration of cattle, manure, methane, and other pollution;”

**Response:** Please refer to Master Responses 1 and 4.

**15.2-301-2:** The commenter states, “b. CARB Staff Signals to Livestock Operators and Factory Farm Gas Producers that They Need to Act Fast to Install Digesters and Generate Methane.

This amendment would lock in perverse incentives and windfall profits for the production of livestock biogas that necessarily favor the concentration of cattle, manure, and pollution. This rule change will even further incentivize livestock operations to install digesters and maximize biomethane production as quickly as possible given the vastly different treatment livestock operations with digesters installed prior to January 1, 2030 and those after January 1, 2030 would receive under a bifurcated regulatory framework. As discussed in previous comments, this would have harmful and potentially irrevocable impacts on the groundwater, drinking water, air quality, and quality of life for people living in the San Joaquin Valley.”

**Response:** Please refer to Master Responses 1 and 4.

**15.2.301-3:** The commenter states, “3. The Proposed Change to the Dairy and Swine Manure Biomethane Calculator Instruction Manual Acknowledges that Livestock Herd Expansions Are Welcomed by CARB Staff. CARB staff propose to alter text in the Instruction Manual for the Tier 1 Simplified Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure to more expressly allow herd expansions. Staff propose to change the instruction that factory farm gas projects “must not exceed the herd size limit set by any applicable local or state regulatory or other legal requirements” to “must be in compliance with any herd size limit....” This change accommodates the many jurisdictions that do not limit factory farm herd sizes and those that expressly countenance herd expansions when done in conjunction with digester developments. This technical change illustrates that CARB staff know and accept that herd expansions are allowed and a likely response to staff’s proposed LCFS amendments at factory farms generating the manure used to produce LCFS credits.”

**Response:** Herd size expansion is not a reasonably foreseeable compliance response with the Proposed Amendments. Please refer to Master Response 1. Commenter refers to proposed amendments to the instruction manual for the Tier 1 CI (carbon intensity) Calculator for Dairy and Swine Manure Biomethane pathways, which is proposed to be incorporated by the LCFS regulation. The proposed second 15 day amendment the commenter identifies, clarifies and broadens a proposed first 15 day addition to the instruction manual of a provision regarding the inputs for the modeled baseline methane emissions from the anaerobic storage/treatment system. The amendment provides, “[t]he monthly average livestock population entered in Fields L1.(1-6).8 must be in compliance with any herd size limits set by any applicable local or state regulatory or other legal requirements.” Pathway applicants must already comply with the regulatory and other legal requirements or risk having credits generated in violation of the law invalidated. This provision and the clarifying modification clarifies that compliance with applicable herd size limits is the appropriate baseline input for purposes of modeling baseline emissions.