

August 27, 2024

Ms. Rajinder Sahota Deputy Executive Officer Climate Change and Research California Air Resources Board 1001 I St Sacramento, CA 95814

## Re: Comments on Modifications to the Proposed Low Carbon Fuel Standard Amendments Issued August 12, 2024

Dear Ms. Sahota,

The Renewable Fuels Association (RFA) appreciates the opportunity to comment on the modifications to the proposed Low Carbon Fuels Standard (LCFS) amendments released on August 12, 2024. The RFA is the leading trade association for America's ethanol industry. Our mission is to drive growth in sustainable renewable fuels and bioproducts for a better future.

RFA has commented extensively over the last two years during the California Air Resources Board's (CARB) process of modifying and updating the LCFS program. The comments here are responsive to the August 12 proposal and should be considered in conjunction with our other comment letters. In particular, we are attaching to this letter the comments we submitted regarding the April 10, 2024, LCFS workshop in order to ensure that they are part of the formal record.

#### Approval of E15 Is Necessary to Meet the Proposed Increase in Compliance Stringency at the Lowest Practical Cost to California Consumers

In our last comment letter, RFA supported an increase to a 9% one-time step-down in the compliance curve, contingent on a commitment from CARB to begin the regulatory process to approve E15. While the modifications to the proposed LCFS amendments do include the 9% step-down, a schedule for a rulemaking to approve E15 has not been released.

As RFA has pointed out multiple times, limiting ethanol to a 10% blend not only locks in a 90% petroleum dependence in the gasoline market with myriad negative environmental and public health consequences, but it also severely limits needed credit generation in the gasoline pool. The proposed caps on soybean and canola oil-derived biomass-based diesel (BBD) are likely to slow the generation of excess LCFS credits in the diesel pool that have been used to cover ever-increasing cumulative net LCFS deficits in the gasoline pool. E15 is a critical near-term strategy for decarbonizing liquid fuels, which will continue to dominate transportation in California for years, if not decades, to come.

From a consumer perspective, E15 offers a unique opportunity to lower the cost of gasoline while cutting emissions of greenhouse gases and criteria pollutants. California drivers could save \$0.20 per gallon if the state allowed gas stations to sell E15 fuel, according to a new study authored by David Zilberman, PhD, a distinguished professor in the Agricultural and Resources Economics Department at the University of California, Berkeley, and Scott Kaplan, PhD, assistant professor in the Economics Department at the U.S. Naval Academy.<sup>1</sup> The study found that the potential savings for California consumers could reach \$2.7 billion annually and that "low-income commuters may stand to gain the most from a transition towards E15," given their propensity to have longer commutes and less fuel-efficient vehicles.

California is the only state in the U.S. that has not approved E15. The state's failure to approve the use of E15 essentially amounts to a gas price hike at a time when hard-working Californians can least afford it.

SB 32, which extended the goals of California's groundbreaking AB 32 legislation, is clear in the mandate for CARB to adopt rules and regulations to "achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions." Expeditiously approving E15 use in California is consistent with that directive and necessary for CARB to comply with state clean-air policies, bringing significant environmental, health, and cost benefits to California citizens.

# The Primary Rationale for Introducing Biomass Sustainability Requirements in the LCFS Amendments No Longer Exists

During public workshops held in 2022 and 2023 regarding potential changes to the LCFS, CARB openly considered whether any measures should be taken in response to the growth in the use of crop-based feedstocks for BBD. In the workshop on July 7, 2022, staff noted that CARB had received feedback in which it was "[r]ecommended that CARB set an upper limit on biofuel volumes from lipid-based feedstocks."<sup>2</sup> For CARB's February 22, 2023, workshop, the staff presentation contained three slides showing increases in BBD and related crop-based feedstock usage and then asked, "Are there regulatory mechanisms staff should consider?"<sup>3</sup>

Rather than imposing a lipid "cap," CARB established feedstock sustainability requirements in the proposed LCFS amendments issued in December 2023. In the Crop-Based Biofuels Sustainability Criteria section of its Initial Statement of Reasons,

<sup>&</sup>lt;sup>1</sup> <u>https://d35t1syewk4d42.cloudfront.net/file/2823/Impact%20of%20Introducing%20E15%20in%20California%207-9-24.pdf</u>

<sup>&</sup>lt;sup>2</sup> https://ww2.arb.ca.gov/sites/default/files/2022-07/LCFSWorkshop\_Presentation.pdf

<sup>&</sup>lt;sup>3</sup> https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/lcfs\_meetings/LCFSpresentation\_02222023.pdf

CARB explained, "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."<sup>4</sup>

However, in the 15-day changes to the proposed amendments issued on August 12, 2024, CARB reversed course and capped the generation of credits for BBD from "virgin soybean oil and canola oil" at 20% of annual BBD volumes on a company-wide basis. Yet, CARB did not remove the sustainability requirements, even though they were intended to accomplish the same objective. Instead, CARB doubled down by making the requirements more onerous.

# Certification Under the Proposed Sustainability Requirements Is Unnecessary for U.S.-Produced Ethanol

As discussed at length in the attached comments RFA submitted in response to the CARB workshop that was held on April 10, 2024, the risk that U.S. ethanol production will result in adverse outcomes of concern to CARB is essentially nonexistent.

As noted above, the proposed sustainability requirements were intended to reduce the risk associated with a *"rapid expansion* of biofuel production and biofuel feedstock demand." (Emphasis added.) However, fuel ethanol production has receded since 2018, and the market for ethanol in U.S. road transportation is mature. Moreover, total U.S. cropland has been declining for decades, and the entire increase in U.S. corn production since 2007 has come from rising yields (and switching acreage from other crops), not expanding crop area.

This was implicitly acknowledged by CARB. In the Crop-Based Biofuels Sustainability section of the staff presentation to the April workshop, which was held four months after the proposed amendments were issued, all six of the charts focused on BBD and related feedstocks, especially soybean oil. In the Topics for Discussion slide in that section, the first three bullets addressed BBD and related feedstocks. Notably, however, CARB asked, "Should E15 be considered to help reduce retail gasoline costs?" This indicates that the same concerns did not extend to ethanol.

## The Latest Version of the Sustainability Requirements Is Unjustifiably Onerous and Likely Unworkable, Which Could Have Ramifications for the State's Fuel Supply

The sustainability requirements are scheduled to be phased in over time. Starting in 2026, biofuel producers "must maintain attestations … and geographical shapefiles or coordinates of plot boundaries (farm, plantation or forest) that are managed to produce the biomass with the annual fuel pathway report."<sup>5</sup> However, even this initial phase will be difficult for some ethanol producers and unworkable for others.

<sup>&</sup>lt;sup>4</sup> https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/isor.pdf

<sup>&</sup>lt;sup>5</sup> https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/15day\_atta-1.pdf

For those ethanol producers that predominantly originate corn and sorghum directly from farmers, a typical facility will buy grain from hundreds of growers. And, for those producers that purchase a significant share of their feedstock from grain elevators, the complications of complying with the requirements would be compounded.

Not all farmers will want to share their shapefiles/coordinates with ethanol producers or elevators, and land sales and shifts in rentals from year to year would make it challenging to ensure that all records are up to date. Often, elevators and the grain-purchasing areas of ethanol plants are sparsely staffed and have basic computer systems, and elevators operate on razor-thin margins, making it unattractive to incur additional costs that do not come with associated revenues.

Additionally, an officer of each ethanol company will be required to sign an attestation *under penalty of perjury* that "the biomass used to produce [the fuel] is sourced from land that was cleared or cultivated prior to January 1, 2008, and actively managed or fallow, and non-forested since January 1, 2008. Biomass has not been sourced from land that is protected by international or national law or by the relevant competent authority for nature protection purposes." He or she must "further certify that geographical shapefiles or coordinates of plot boundaries (farm, plantation or forest) accurately represent the source of biomass used under this fuel pathway."

However, ethanol facility employees will not have firsthand knowledge of the land history and field dimensions of farms where the feedstock was produced, and they will likely be extremely reluctant or unwilling to sign such an attestation. This requirement is unlike the one for specified source feedstocks (e.g., waste fats, oils, and greases), where suppliers, who are directly responsible for and knowledgeable about the origin and handling of the materials, are required to provide the attestations.

Starting in 2028, biofuel producers are required to meet chain-of-custody requirements similar to those for specified source feedstocks, including feedstock transfer documents. In the case of corn, a highly efficient elevator system, in which grain from numerous origins is commingled, has evolved over decades if not longer. For an ethanol plant that sources a significant share of its grain from one or more elevators (i.e., an elevator is the "first gathering point"), having to "show shipments of feedstock type and quantity directly from point of origin to the fuel production facility" is not workable, at least without receiving a premium for ethanol that would offset the cost of setting up and operating an identity-preservation system. Using a mass-balance approach would at least be theoretically possible, but "material balance or energy balance systems that control and record the assignment of input characteristics to output quantities at relevant points along the feedstock supply chain between the point of origin and the fuel production facility" are not currently in place.

However, some farmers and elevators would not want to go through the extra effort associated with the 2026 and 2028 requirements and would instead sell their grain into other market channels (e.g., for livestock feeding or exports) rather than ethanol. As

discussed in RFA's comments on the April 2024 workshop, if California moves ahead with any feedstock certification program, there should be a provision to designate all U.S.-produced ethanol as already in compliance, so long as aggregate cropland area does not expand beyond a 2007 baseline. This would be consistent with the EPA's approach under the federal Renewable Fuel Standard.

The final set of sustainability requirements to be implemented in 2031 would be extremely onerous for ethanol facilities' purchases of feedstock directly from farmers and completely unworkable for purchases through grain elevators. While the objective underlying the requirement that feedstock "be produced according to best environmental management practices" might be commendable, the four sustainability areas that are addressed (biodiversity, soil quality, "contamination" from fertilizers and other inputs, and water quality) are all-encompassing for farm operations yet barely defined in the CARB proposal.

In 2023, 1.34 billion gallons of corn- and fiber-based ethanol were used in California toward the LCFS.<sup>6</sup> This represented 8.6% of the ethanol produced in the U.S. During the 2023/24 crop-marketing year, USDA estimates that 35.5% of the U.S. corn crop will be used for ethanol and coproducts.<sup>7</sup> This means that the equivalent of 3.0% of the U.S. corn crop is used to produce ethanol consumed in California. Given the Advanced Clean Cars II program, it is likely that less ethanol will be consumed in California in 2031—especially if it remains the only state not to allow sales of E15 blends—while corn yields will continue to increase. As a result, on the present trajectory, well under 3% of the U.S. corn crop will be used to provide ethanol to California in 2031.

As a result, a large majority of farmers would have the option not to incur the additional effort and cost of complying with the California sustainability requirements. They are supplying commodity corn that is not receiving a premium, so why would they choose to sell it at a lower profit with a higher administrative burden? They could simply sell it into livestock feeding or export channels—or even to ethanol plants that are not shipping to California.

The same applies to grain elevators. They typically buy from local farmers or from smaller elevators and then commingle the corn that they receive. They do not necessarily know in advance which farms they will originate/handle corn from—and if they buy from a feeder elevator, they might never know. Elevators would suddenly be in the position of having to stipulate in advance to farmers the production practices that must be followed, in addition to undertaking the additional recordkeeping. Again, they are supplying commodity corn that is not receiving a premium, so why would they choose to sell it at a lower profit with a higher administrative burden?

The situation would be exponentially more difficult in a drought year. An ethanol plant in a drought area can have to buy substantial quantities of corn from a distant elevator, rather than purchasing from local farmers and elevators with which they usually do

<sup>&</sup>lt;sup>6</sup> https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-guarterly-summaries

<sup>7</sup> https://www.usda.gov/oce/commodity/wasde/wasde0824.pdf

business. The shift in suppliers is unexpected, so there is no ability to retroactively have the distant elevator inform growers in the area that they will need to meet California's environmental requirements that season.

All of this could cause some ethanol producers to have great difficulty complying with the sustainability criteria in 2028 and 2031—or they could simply not want to incur the potential exposure associated with noncompliance and particularly with signing the attestation. Therefore, they might decide not to sell ethanol to California. From the state's perspective, this could cause volume constraints and price increases in the gasoline pool at a time when California is already concerned about how to avoid problems in the liquid fuel supply during the transition to ZEVs.<sup>8</sup>

If the state is going to consider sustainability criteria, it would be far more reasonable for those to be implemented as part of a program that allows greenhouse gas-reducing feedstock production practices to be recognized in determining the carbon intensity (CI) of the resulting biofuels—after an extensive process of consultation with industry. This would provide an opportunity for a premium to be received for feedstock that would at least offset the additional cost and effort incurred by farmers, elevators, and biofuels producers. It is worth noting that at the federal level the Inflation Reduction Act provided billions of dollars to incentivize farmers to undertake climate-smart agriculture practices, rather than simply mandating that they follow such practices, in order to dramatically kickstart adoption where it was not already occurring.<sup>9</sup>

# The New Language Regarding Land Use Change Is Unclear and Potentially Problematic

In the proposed amendments, a column labeled 2015 Region of Analysis was added to Table 6, Land Use Change Values for Use in CI Determination. Ostensibly, this was done to assist in the determination of a land use change (LUC) "value appropriate to use for a region/feedstock/fuel combination not currently listed" in the table.

However, CARB also added the following language about LUC as section 95488.3(d)(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.

<sup>&</sup>lt;sup>8</sup> <u>https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/oil/081624-californias-governor-looks-to-regulate-gasoline-price-shocks-during-the-energy-transition-period</u>

<sup>&</sup>lt;sup>9</sup> https://www.usda.gov/media/press-releases/2024/08/16/fact-sheet-celebrating-two-years-inflation-reduction-act

The first sentence in the section is open-ended, and only the last sentence refers to a factor (limited to feedstock) that is not listed in Table 6. In order to ensure that this provision cannot be interpreted more broadly, CARB should add language at the beginning of section 95488.3(d)(2) specifying that it only applies to region/feedstock/fuel combinations not listed in Table 6.

It is also notable that the section appears to allow new discretion for the Executive Officer of CARB to unilaterally increase LUC factors but not decrease them. RFA and many other stakeholders have documented how the existing LUC factors for corn ethanol are overstated and should be revised downward.

RFA and others have also provided analysis demonstrating that modern farming practices are capable of significantly decreasing feedstock CI. The federal government is recognizing these benefits in the regulatory framework for tax credits under the Inflation Reduction Act, and CARB should finally move forward with similar recognition under the LCFS.

Thank you for the opportunity to submit these comments. RFA looks forward to working with CARB board members and staff to strengthen and extend the successful LCFS program.

Sincerely,

Scott Richman

## ATTACHMENT



May 10, 2024

Ms. Rajinder Sahota Deputy Executive Officer – Climate Change and Research California Air Resources Board 1001 I St Sacramento, CA 95814

## Re: Comments on April 10, 2024 LCFS Workshop

Dear Ms. Sahota,

The Renewable Fuels Association (RFA) appreciates the opportunity to comment on the Low Carbon Fuel Standard (LCFS) workshop held on April 10, 2024. The RFA is the leading trade association for America's ethanol industry. Our mission is to drive growth in sustainable renewable fuels and bioproducts for a better future.

The RFA supports the LCFS and looks forward to continued engagement in this process to strengthen and extend the program beyond 2030. The RFA is also working around the country in collaboration with other stakeholders to develop and implement clean fuel programs in other states.

The RFA has commented extensively over the last two years during the California Air Resources Board's (CARB) process of modifying and updating the LCFS program. The comments here are responsive to the latest workshop and should be considered in conjunction with our other comment letters.

## The one-time step-down should be increased to nine percent, contingent on a commitment from CARB to begin the regulatory process to approve E15.

Overcompliance with the LCFS has accelerated and is stifling the innovation necessary for California to meet its climate goal of carbon neutrality by 2045. At the end of 2023, the credit bank was approaching 24 million metric tons, and it has been growing steadily every quarter for the last two years.

The significant imbalance between credits and deficits has chilled the credit market, with credit pricing this month dropping to the lowest levels since July 2015. Delays in finalizing the modifications to the LCFS program are adding to the market uncertainty. Consequently, the long-term market signals necessary for new investments in low-carbon technologies are lacking, undermining the future success of the program.

The 45-day rulemaking package for the LCFS included a five percent step-down. The April 10<sup>th</sup> workshop showed modelling for both a seven and nine percent step-down. A strong one-time step-down in the compliance curve of nine percent, combined with the proposed Auto Acceleration Mechanism, would be the most effective and immediate measure CARB can implement to send the appropriate investment signals and restore confidence in the long-term viability of the LCFS program.

# Approval of E15 in California would further reduce carbon emissions, support a more stringent LCFS compliance curve, lower criteria pollutant emissions, and reduce consumer fuel costs.

The RFA has been actively working with CARB over the last five years on the process for E15 approval. California is now the only state in the country that does not allow the use of E15 as a legal fuel. The Multi-Media Evaluation required by regulation to certify new fuels in California is complete and is awaiting final approval by the Environmental Policy Council.

E15 certification is the single most effective measure CARB can adopt in the transportation sector to immediately and significantly reduce GHG emissions further, while at the same time reducing criteria pollutant emissions and consumer costs. If all gasoline sold in California today were E15 instead of E10, the state would see an additional decrease in GHG emissions of approximately 2 million metric tons per year.

On the cost side, the wholesale price of ethanol in California typically trades at a significant discount to CARBOB, the fuel with which ethanol is blended to make finished California gasoline (Figure 1). In recent months, prices for ethanol sold in California have consistently been \$1 per gallon below the price of CARBOB.

This cost-effective strategy for significant GHG reductions supports a more significant step-down in the LCFS compliance curve while displacing more petroleum and improving public health through lower tailpipe and toxics emissions.

The RFA has been advocating since the beginning of the current LCFS rulemaking for E15 to be a part of this round of program modifications. We appreciate that CARB is now asking for comments on E15 in connection with the April 10<sup>th</sup> workshop, but since E15 was not part of the 45-rulemaking package we are urging CARB to expeditiously begin a separate rulemaking process to approve E15.

As part of the final LCFS rulemaking, we encourage CARB to include a staff recommendation or a Board resolution to immediately initiate an expedited rulemaking to approve E15 in California. Given the myriad environmental and economic benefits of E15, as well as the time value of near-term carbon reductions, the time to approve E15 in the state is now.



Figure 1: Los Angeles Gasoline Blendstock (CARBOB) vs. Ethanol Prices

# U.S.-produced ethanol already meets the objectives of the proposed sustainability provisions and should not be subject to further certification.

In the Initial Statement of Reasons for the proposed LCFS amendments, CARB provides its rationale for introducing crop-based biofuels sustainability criteria: "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."<sup>1</sup> However, U.S. fuel ethanol production has declined since peaking in 2018, and federal government forecasts do not reflect "rapid expansion," but rather flat or declining volumes, depending on the timeframe. As a result, there is no risk of associated deforestation or land use change related to U.S. ethanol production.

After reaching 16.1 billion gallons (bg) in 2018, ethanol production slipped to 15.8 bg in 2019 and then fell sharply to 13.9 bg in 2020 as a result of the pandemic, according to the U.S. Energy Information Administration (EIA) (Figure 2). Volumes have recovered somewhat over the last few years, but output was only 15.6 bg in 2023. Moreover, according to EIA's May 2024 *Short-Term Energy Outlook*, production is forecast to be 15.8 bg in both 2024 and 2025, remaining below the 2017 and 2018 levels. The compound annual growth rate from 2010 to 2025 will have been just 1.2%.

<sup>&</sup>lt;sup>1</sup> <u>https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/isor.pdf (emphasis added)</u>



Figure 2: U.S. Fuel Ethanol Production

The number of vehicle miles traveled in the U.S. has followed a similar pattern over the last five years. Increasing sales of electric vehicles (EVs) and improving fuel economy for vehicles with internal combustion engines have also weighed on ethanol consumption. Trends toward reduced commuting (as people are working from home at least part of the week), higher fuel economy, and expanded EV sales are expected to continue in the future.

Beyond market developments, adoption of EVs will be explicitly or implicitly required by policies adopted over the last couple of years. In November 2022, California adopted the Advanced Clean Cars II (ACC II) program, which will require EVs to account for 35% of new passenger car, truck, and sport-utility vehicle sales starting with model year 2026, ramping up to 100% by model year 2035. A number of other states have adopted all or part of California's vehicle regulations under Section 177 of the Clean Air Act, and as a result ACC II is expected to apply to approximately one-third of U.S. light-duty vehicle (LDV) sales starting in 2027.

Moreover, in March 2024, EPA released its final Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles, more commonly referred to as the "tailpipe emissions standards." In conjunction with the release, the Agency stated, "EPA projects that from MYs 2030-2032 manufacturers may choose to produce battery electric vehicles (BEVs) for about 30 percent to 56 percent of new lightduty vehicle sales."<sup>2</sup> Plug-in hybrid electric vehicles (PHEVs) would account for part of

<sup>&</sup>lt;sup>2</sup> https://www.epa.gov/system/files/documents/2024-03/420f24016.pdf

the remaining sales. Under EPA's "central case" technology pathway, the share of U.S. LDV sales represented by plug-in EVs would exceed the share that would result only from adoption of ACC II by California and Section 177 states.

In a Regulatory Impact Analysis, EPA estimated the impact that the standards would have on liquid-fuel consumption. Based largely on that analysis, RFA estimates that if the average ethanol content of finished gasoline were to remain at the 2023 level of 10.39%, the annual impact on U.S. ethanol consumption would be 300 million gallons (mg) in 2030 and more than 700 mg in 2032 (Figure 3). Given that adoption of E15 is expected to continue expanding in the interim, the impact is likely to be even greater. If all finished gasoline sold in the U.S. were E15 in 2032, 1 billion fewer gallons of ethanol will be consumed than would be the case without the rule.

Figure 3: Annual Reduction in Ethanol Consumption Under EPA 2027-2032 Tailpipe Standards



Source: RFA analysis of EPA Final Regulatory Impact Analysis (Table 4-13 Note: Assumes 98% of liquid fuel for light- and medium-duty vehicles is gasoline, based on Department of Transportation data

For land use change to actually occur, production of a certain biofuel, and the associated consumption of feedstock, must increase more rapidly than gains in feedstock production efficiency (i.e., crop yield). Models used to estimate emissions resulting from land use change typically assume that demand for a particular biofuel outpaces the agriculture sector's capacity to provide the requisite feedstock on existing cropland. This has not occurred in the real world, and projections looking forward show this will not occur in the future.

As noted in a recent paper written by leading researchers involved in the lifecycle analysis of biofuels, "Unfortunately, land-use changes are not directly observable or measurable. Economic models have been used to estimate land-use changes."<sup>3</sup>

Models are typically run separately for a certain biofuel volume trajectory and for a counterfactual scenario (e.g., without a policy change), and then the results are compared. Alternatively, models can be run to show the impact of a biofuel volume "shock" of a specific size. For example, in the Model Comparison Exercise that EPA conducted in conjunction with issuing the 2023-2025 volume obligations under the Renewable Fuel Standard (RFS), it introduced a corn ethanol shock and a soybean oil biodiesel shock, each of which involved an additional billion gallons of domestic consumption per year.<sup>4</sup> However, as discussed above, U.S. ethanol volumes are not expected to grow materially in the near term, and usage as a road transportation fuel is expected to decrease in the medium term. That is, there is no upward "shock" to be modeled to estimate expected land use change.

In introducing its proposed sustainability requirements, CARB stated, "Crop-based and forestry-based feedstocks must not be sourced on land that was forested after January 1, 2008."<sup>5</sup>

Importantly, the entire increase in U.S. corn production since 2007 has come as a result of rising yields (and switching with other crops), not expanding acreage. The U.S. harvested a record corn crop in 2023; however, if yields had stayed the same as in 2007, corn production would not have increased at all (Figure 4).

U.S. corn yields have exhibited a strong upward trend during recent decades. Yields have increased by nearly 1.9 bushels per acre annually since the mid-1990s (Figure 5). This has been the result of substantial investments in seed technology, combined with the adoption of improved agronomic practices.

In the future, if ethanol production is steady or declines, fewer acres will be needed to grow corn to be used as feedstock for ethanol because more corn is being produced per acre. Additionally, approximately 15 pounds of distillers dried grains, a high-quality animal feed ingredient, is produced from each bushel processed for ethanol, along with nearly one pound of distillers corn oil, which is used as a low-carbon-intensity feedstock for biomass-based diesel or as a feed ingredient. Together, nearly one-third of the corn that is used by ethanol biorefineries is returned to the market in the form of coproducts.

<sup>&</sup>lt;sup>3</sup> https://doi.org/10.3390/su16072729

<sup>&</sup>lt;sup>4</sup> https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1017P9B.pdf

<sup>&</sup>lt;sup>5</sup> https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/lcfs\_appa1.pdf



Figure 4: Actual U.S. Corn Production vs. Level if Yields Had Not Changed Since 2007

Source: USDA-NASS (historical production), RFA (analysis) Note: Dashed line represents actual harvested acreage multiplied by 2007 yield



Figure 5: U.S. Average Corn Yield

Putting corn acreage dynamics into a broader context, total U.S. cropland has fallen steadily for decades, as has been documented in previous RFA comments.<sup>6</sup> More specifically, cropland has declined since the beginning of 2008, the date after which CARB's proposed sustainability criteria are intended to ensure that previously forested land is not used to grow feedstocks for the LCFS program. This decline in cropland was confirmed by the 2022 Census of Agriculture released in February, which showed that the amount of cropland in the U.S. fell by an additional 14 million acres, or 4%, since the prior Census in 2017 (Figure 6).



Figure 6: Composition of U.S. Cropland

The Energy Independence and Security Act of 2007 (EISA), in which the RFS was expanded and allocated among several categories of biofuels, specified that the "renewable biomass" used to produce those biofuels must be "harvested from agricultural land cleared or cultivated at any time prior to the [December 19, 2007] enactment of this sentence that is either actively managed or fallow, and nonforested."<sup>7</sup> Thus, the RFS already accomplishes at a national level the objective that CARB has elaborated for its proposed sustainability criteria.

To implement this provision of EISA, EPA adopted an aggregate compliance approach. In its final rule for the revised RFS, EPA stated:

<sup>&</sup>lt;sup>6</sup> See particularly RFA comments dated August 8, 2022 and February 20, 2024

<sup>&</sup>lt;sup>7</sup> https://www.congress.gov/110/plaws/publ140/PLAW-110publ140.pdf

EPA has determined that an aggregate compliance approach is appropriate for certain types of renewable biomass, namely planted crops and crop residue from the United States.

Under the aggregate compliance approach, EPA is determining for this rule the total amount of "existing agricultural land" in the U.S. ... at the enactment date of EISA, which is 402 million acres. EPA will monitor total agricultural land annually to determine if national agricultural land acreage increases above this 2007 national aggregate baseline. Feedstocks derived from planted crops and crop residues will be considered to be consistent with the definition of renewable biomass and renewable fuel producers using these feedstocks will not be required to maintain specific renewable biomass records ... unless and until EPA determines that the 2007 national aggregate baseline is exceeded.<sup>8</sup>

To ensure compliance, EPA tracks U.S. agricultural land area annually using USDA data.<sup>9</sup> Its estimate of the number of acres of agricultural land is consistent with the Census of Agriculture's estimate of total cropland, and the two series have exhibited similar downward trends since 2007. EPA estimates that there has been a 17-millionacre reduction in U.S. agricultural land area between 2007 and 2022 (Figure 7).





Note: No estimates were issued for 2008, 2009, or 2020

<sup>&</sup>lt;sup>8</sup> https://www.govinfo.gov/content/pkg/FR-2010-03-26/pdf/2010-3851.pdf

<sup>&</sup>lt;sup>9</sup> Note that EPA's definition of agricultural land includes Conservation Reserve Program acreage

A similar compliance approach was recently adopted by Environment and Climate Change Canada (ECCC) for ethanol produced from U.S.-grown feedstock. As noted by USDA, "On November 9, 2023, ECCC publicly announced that it approved the U.S. application for legislative recognition which demonstrates that U.S. feedstock is in compliance with the land use and biodiversity (LUB) criteria under the Clean Fuel Regulation (CFR). ... Without legislative recognition, individual farmers or states would have had to prove their own compliance, as of January 1, 2024."<sup>10</sup>

If California moves ahead with any feedstock certification program, there should be a provision comparable to those in the RFS and CFR to designate all U.S.-produced ethanol as in compliance with the program, so long as aggregate cropland acreage does not expand beyond a 2007 baseline.<sup>11</sup> This is justified by both the steady decline in U.S. cropland and the lack of growth reflected in federal government forecasts/analyses of future ethanol volumes, as detailed above.

It is recognized that two developments have the potential to result in growth in domestic ethanol consumption beyond these levels: the adoption of E15 and the emergence of sustainable aviation fuels (SAF). However, E15 currently accounts for a small share of U.S. finished gasoline consumption, and growth will take time, although a combination of compelling economics (including the value of LCFS credits) and compatible infrastructure would be expected to result in somewhat more rapid adoption in California if the fuel blend is approved for sale there.<sup>12</sup> Still, the adoption of E15 in the U.S. and specifically in California is not expected to result in significant growth in overall ethanol consumption and is more likely to result in keeping long-term ethanol consumption at or near current levels.

Regarding SAF, current production of alcohol-to-jet fuel is very small, and it will take years and large capital expenditures for the industry to be built out.<sup>13</sup> Additionally, tax credits available for SAF under the Inflation Reduction Act of 2022 are scheduled to expire at end of 2027. As a result, forecasts of future SAF volumes are highly speculative.

In summary, the proposed LCFS sustainability criteria are not currently justified for ethanol. If future growth of the industry is stronger than reflected in current federal government forecasts, CARB would have sufficient time to revisit the potential introduction of requirements designed to achieve the purpose of the criteria.

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https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Canada%20ack nowledges%20that%20US%20feedstocks%20are%20in%20compliance%20with%20Land%20Use%20a nd%20Biodiversity%20Criteria%20under%20the%20Clean%20Fuel%20Regulation\_Ottawa\_Canada\_CA 2023-0053.pdf

<sup>&</sup>lt;sup>11</sup> AB32 was enacted in late 2006, and the Low Carbon Fuel Standard was identified as a "discrete early action" for greenhouse gas emissions reduction in 2007.

<sup>&</sup>lt;sup>12</sup> <u>https://ethanolrfa.org/media-and-news/category/blog/article/2024/04/e15-sales-set-another-record-in-</u> 2023-but-are-at-risk-again-this-summer

<sup>&</sup>lt;sup>13</sup> <u>https://www.energy.gov/eere/bioenergy/articles/first-ethanol-alcohol-jet-sustainable-aviation-fuel-production-facility</u>

Thank you again for the opportunity to submit these comments. RFA looks forward to working with CARB staff and other stakeholders to strengthen and extend the successful LCFS program.

Sincerely,

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Scott Richman Chief Economist