



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 10th 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.

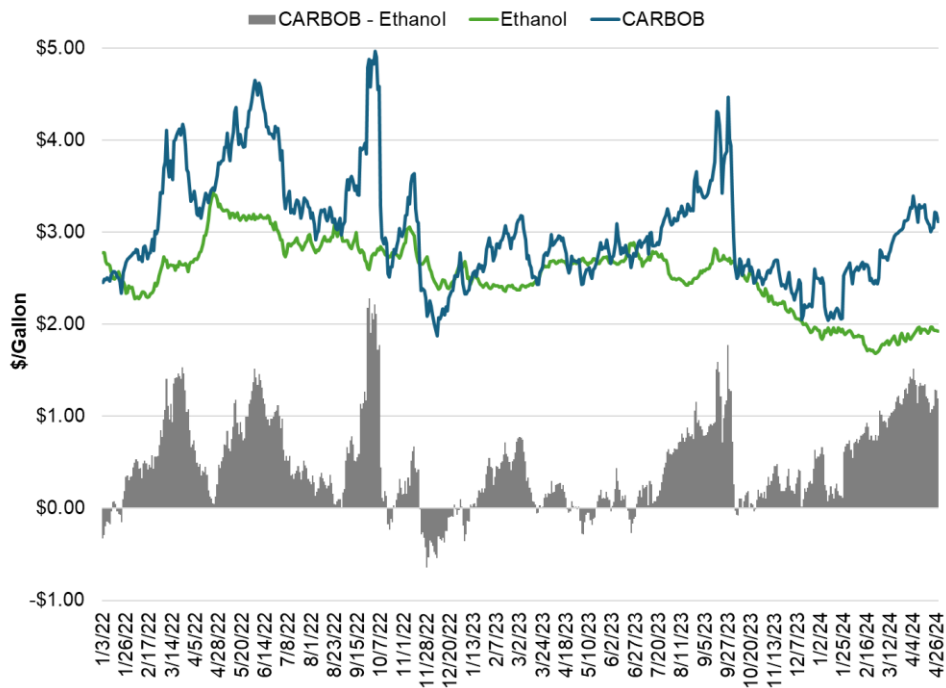
On the cost side, the wholesale price of ethanol in California typically trades at a significant discount to CARBOB, the fuel with which ethanol is blended to make finished California gasoline (Figure 1). In recent months, prices for ethanol sold in California have consistently been \$1 per gallon below 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 10th 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



Sources: OPIS (ethanol), U.S. Energy Information Administration (CARBOB)

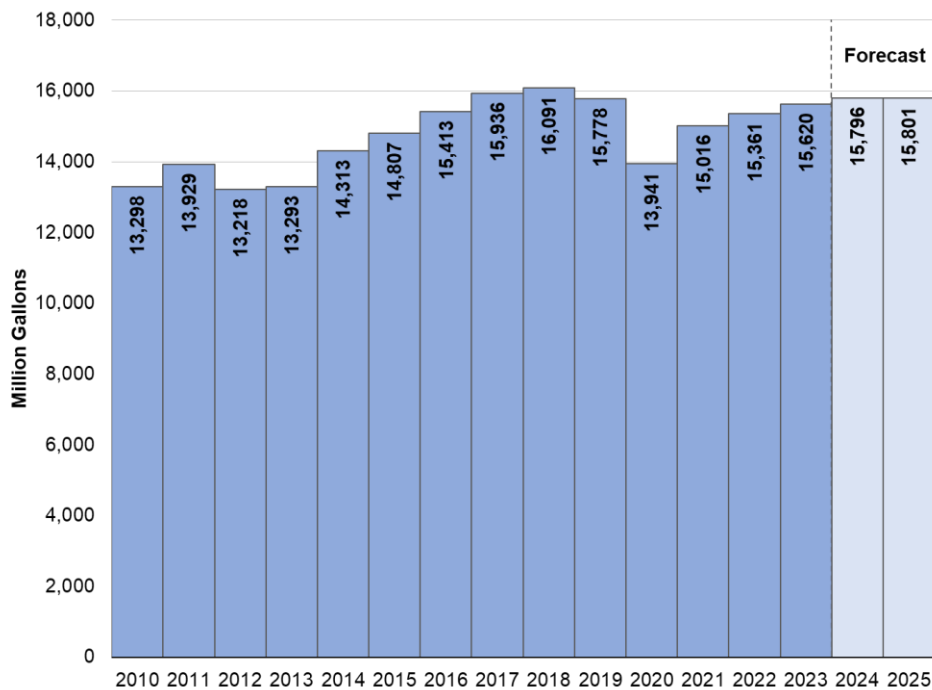
U.S.-produced ethanol already meets the objectives of the proposed sustainability provisions and should not be subject to further certification.

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.”¹ 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%.

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

Figure 2: U.S. Fuel Ethanol Production



Source: EIA

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.

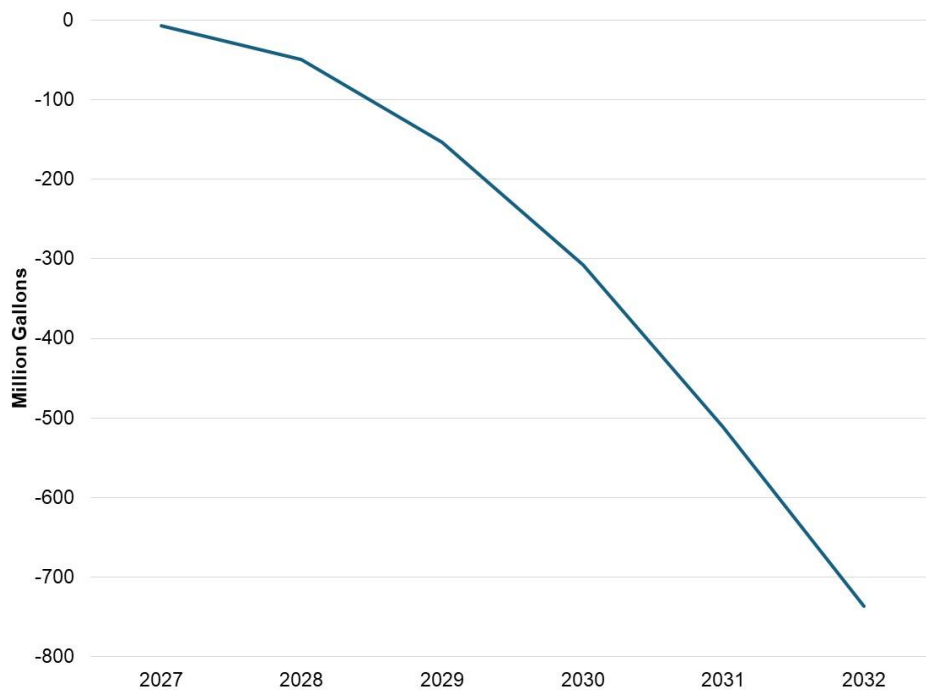
Moreover, in March 2024, EPA released its final Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles, more commonly referred to as the “tailpipe emissions standards.” In conjunction with the release, the Agency stated, “EPA projects that from MYs 2030-2032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

² <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.”³

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.⁴ 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.”⁵

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.

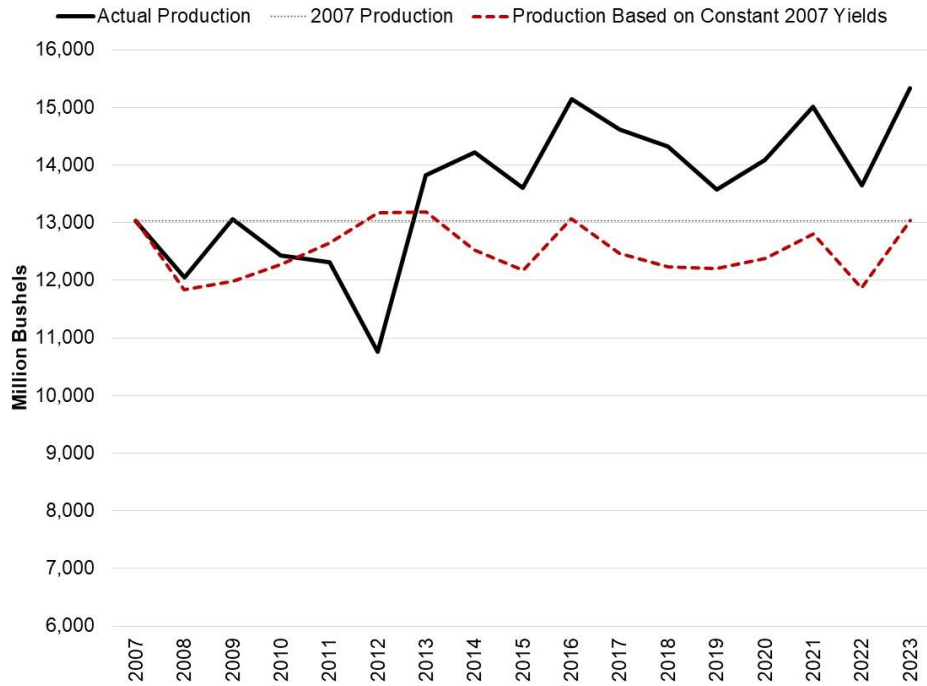
In the future, if ethanol production is steady or declines, fewer acres will be needed to grow corn to be used as feedstock for ethanol because more corn is being produced per acre. Additionally, approximately 15 pounds of distillers dried grains, a high-quality animal feed ingredient, is produced from 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.

³ <https://doi.org/10.3390/su16072729>

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

⁵ https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/lcfs2024/lcfs_appa1.pdf

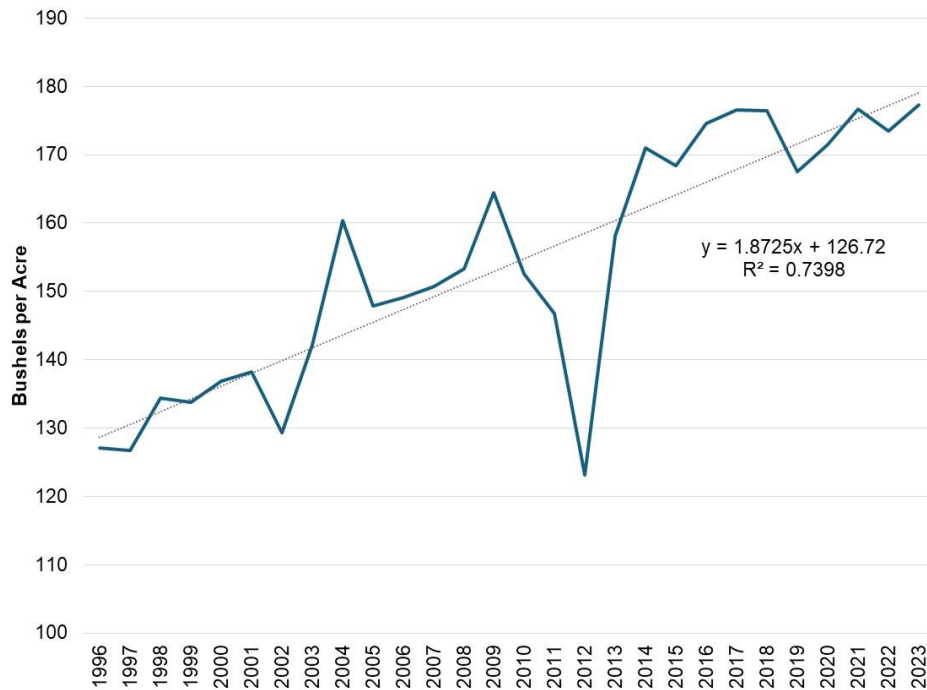
Figure 4: Actual U.S. Corn Production vs. Level if Yields Had Not Changed Since 2007



Source: USDA-NASS (historical production), RFA (analysis)

Note: Dashed line represents actual harvested acreage multiplied by 2007 yield

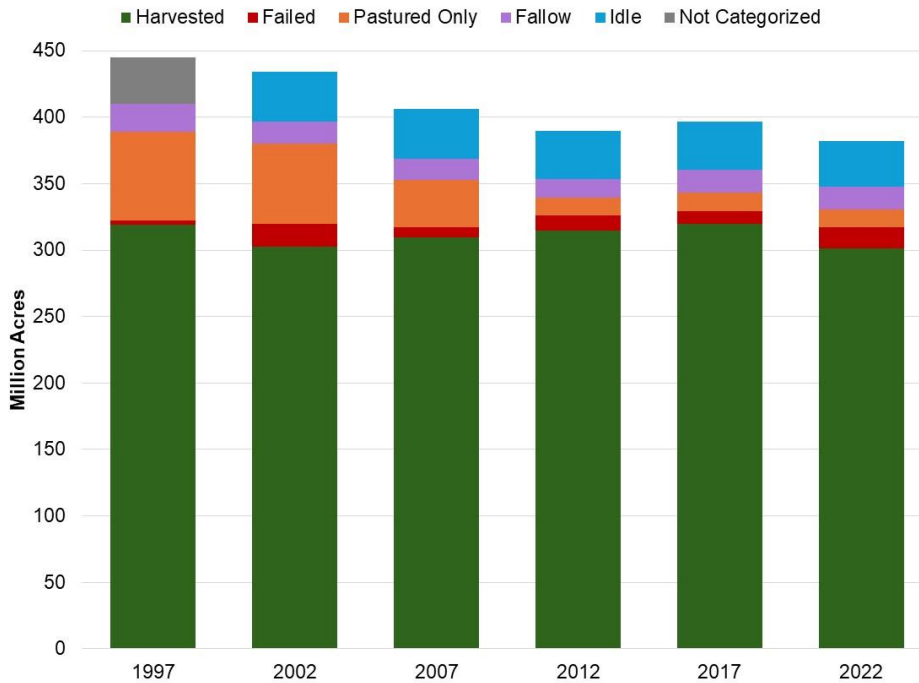
Figure 5: U.S. Average Corn Yield



Source: USDA-NASS (historical production), RFA (analysis)

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.⁶ 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



Source: USDA Census of Agriculture

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.”⁷ 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:

⁶ See particularly RFA comments dated August 8, 2022 and February 20, 2024

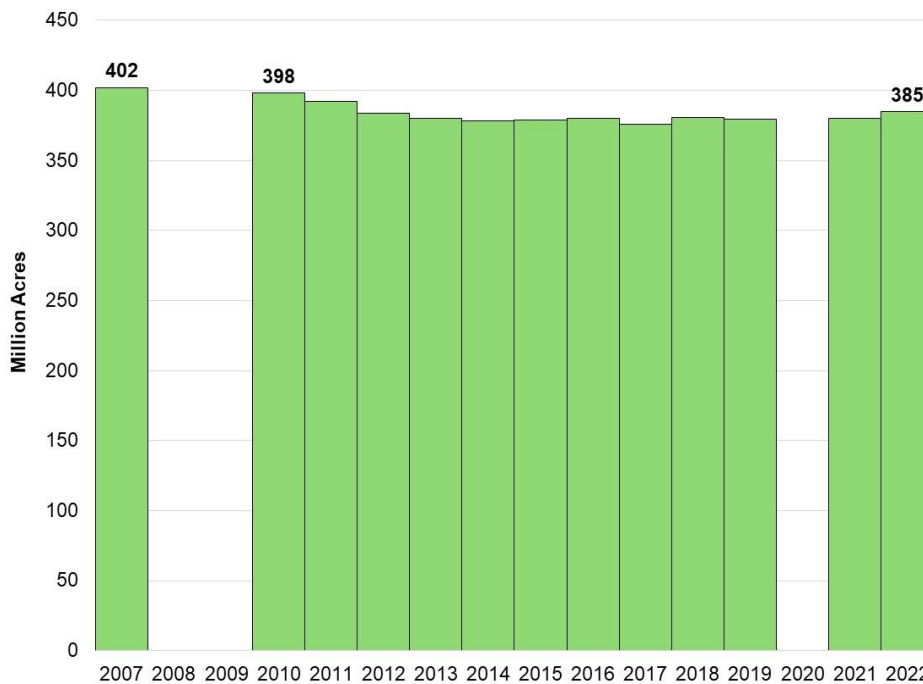
⁷ <https://www.congress.gov/110/plaws/publ140/PLAW-110publ140.pdf>

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.⁸

To ensure compliance, EPA tracks U.S. agricultural land area annually using USDA data.⁹ 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-million-acre reduction in U.S. agricultural land area between 2007 and 2022 (Figure 7).

Figure 7: EPA Assessment of U.S. Agricultural Land Area



Source: EPA

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

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

⁹ 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.”¹⁰

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.¹¹ 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.¹² 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.¹³ 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.

¹⁰

https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Canada%20acknowledges%20that%20US%20feedstocks%20are%20in%20compliance%20with%20Land%20Use%20and%20Biodiversity%20Criteria%20under%20the%20Clean%20Fuel%20Regulation_Ottawa_Canada_CA_2023-0053.pdf

¹¹ 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.

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

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

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,

A handwritten signature in blue ink, appearing to read "Scott Richman". The signature is fluid and cursive, with a long horizontal stroke at the end.

Scott Richman

Chief Economist