

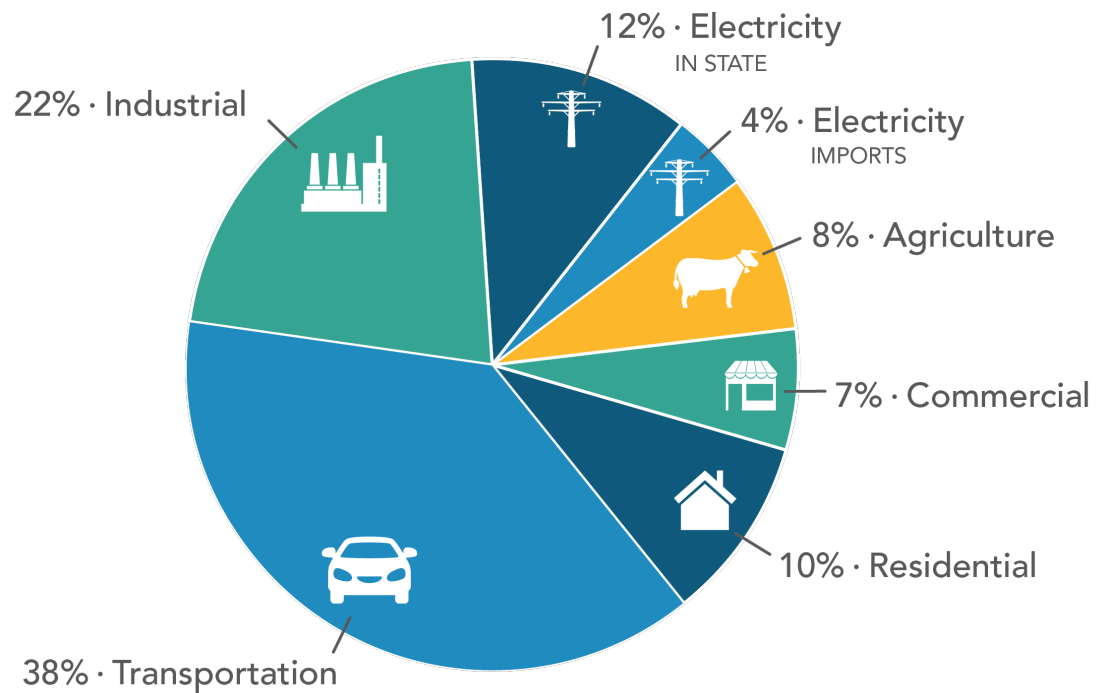
# Biofuels and Land Use Change Forum

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MATTHEW BOTILL  
CHIEF, INDUSTRIAL STRATEGIES DIVISION  
NOVEMBER 2025



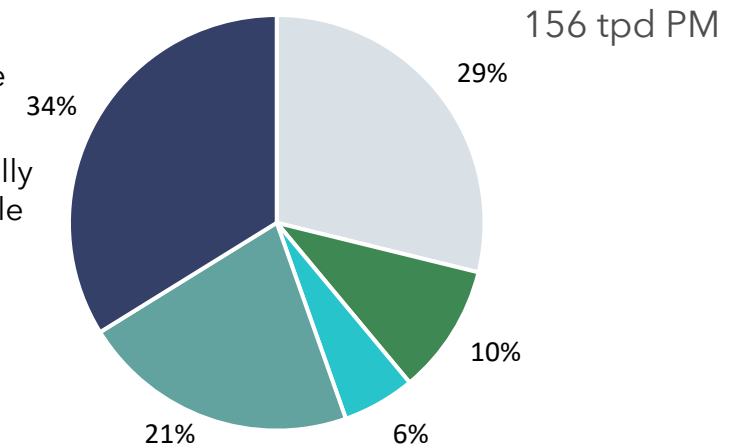
# Climate and Air Pollution from Transportation



360.4 MMT CO<sub>2</sub>e  
2023 TOTAL CA EMISSIONS

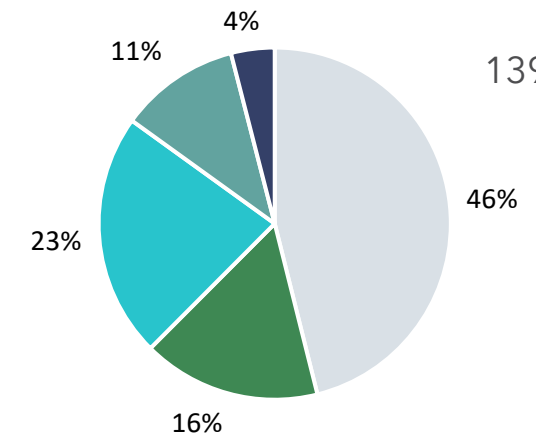
- On-Road Mobile
- Off-Road Mobile
- Primarily Federally Regulated Mobile
- Stationary (Combustion)
- Areawide (Combustion)

PM Emissions



156 tpd PM

NOx Emissions



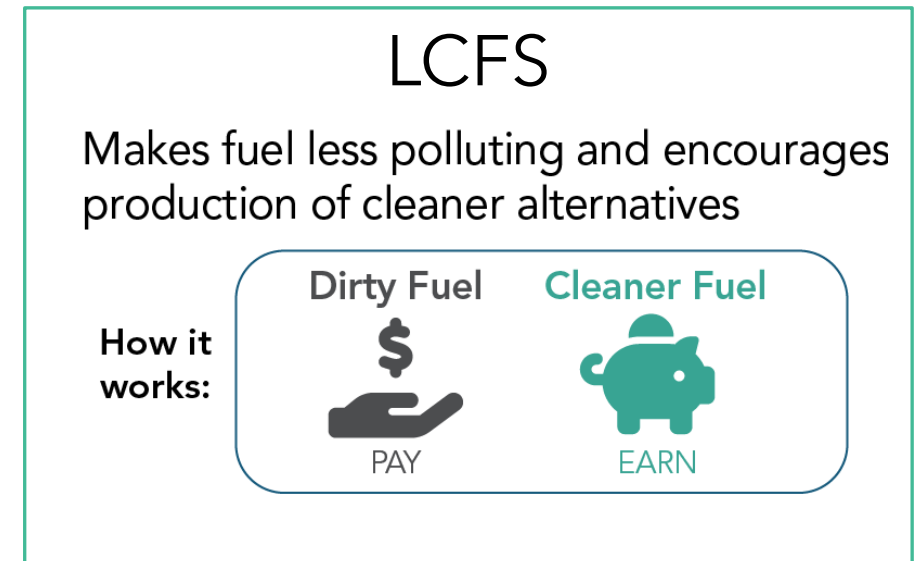
1397 tpd NOx

2020 data

# CA Low Carbon Fuel Standard

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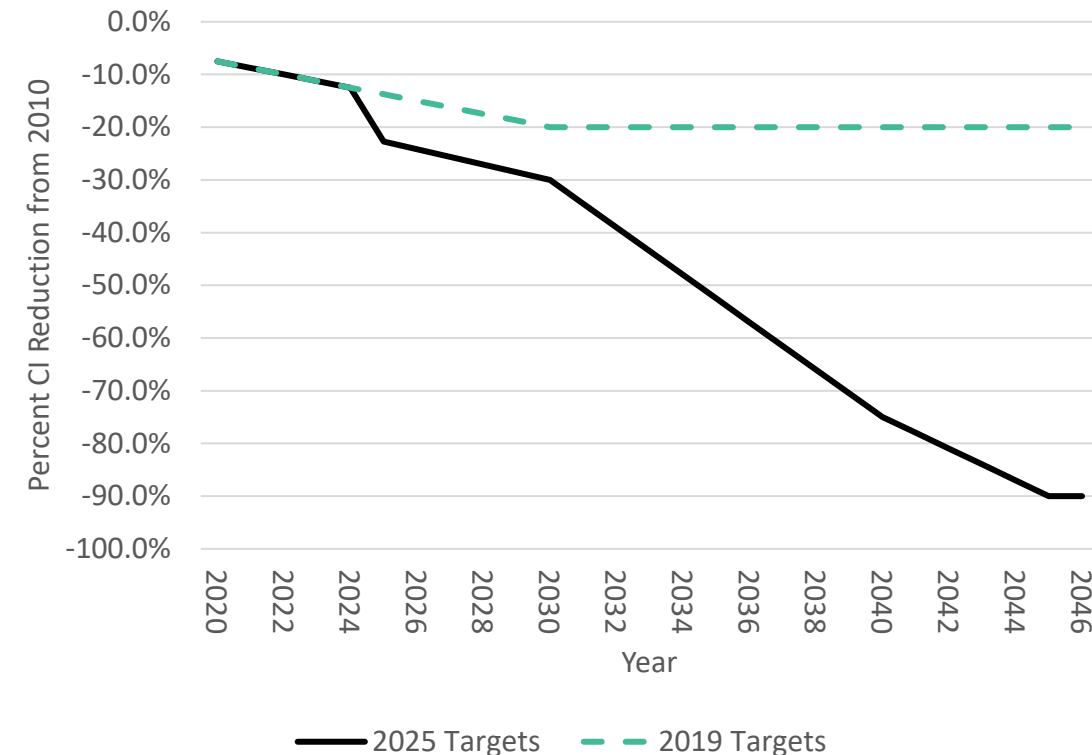
- California's primary program to promote alternative transportation fuel use
- **Goal:** Reduce carbon intensity (CI) of transportation fuels and diversify the fuel mix
- **History:**
  - Early action measure under AB 32
  - Original adoption in 2009
  - First compliance year in 2011
  - Re-adopted in 2015 to address legal challenge
  - Strengthened in 2018, 2019, and 2025
- **Benefits:**
  - Reduces greenhouse gases (GHGs)
  - Transforms and diversifies the fuel pool
  - Reduces petroleum dependency
  - Reduces emissions of criteria pollutants and toxics
  - Attracts billions in private investment



# CA LCFS 2025 Regulatory Update

## Regulation Amendments Became Effective July 1, 2025

- 2030 target increased from 20% reduction to 30%
- 90% CI reduction by 2045 and 9% step-down in 2025
- Added auto-acceleration mechanism
- Made other updates on RNG use, ZEV infrastructure, feedstock sustainability, utility credit usage, hydrogen, etc.
- CARB staff have posted implementation FAQ:
  - <https://ww2.arb.ca.gov/resources/fact-sheets/2025-lcfs-amendment-implementation-faq>



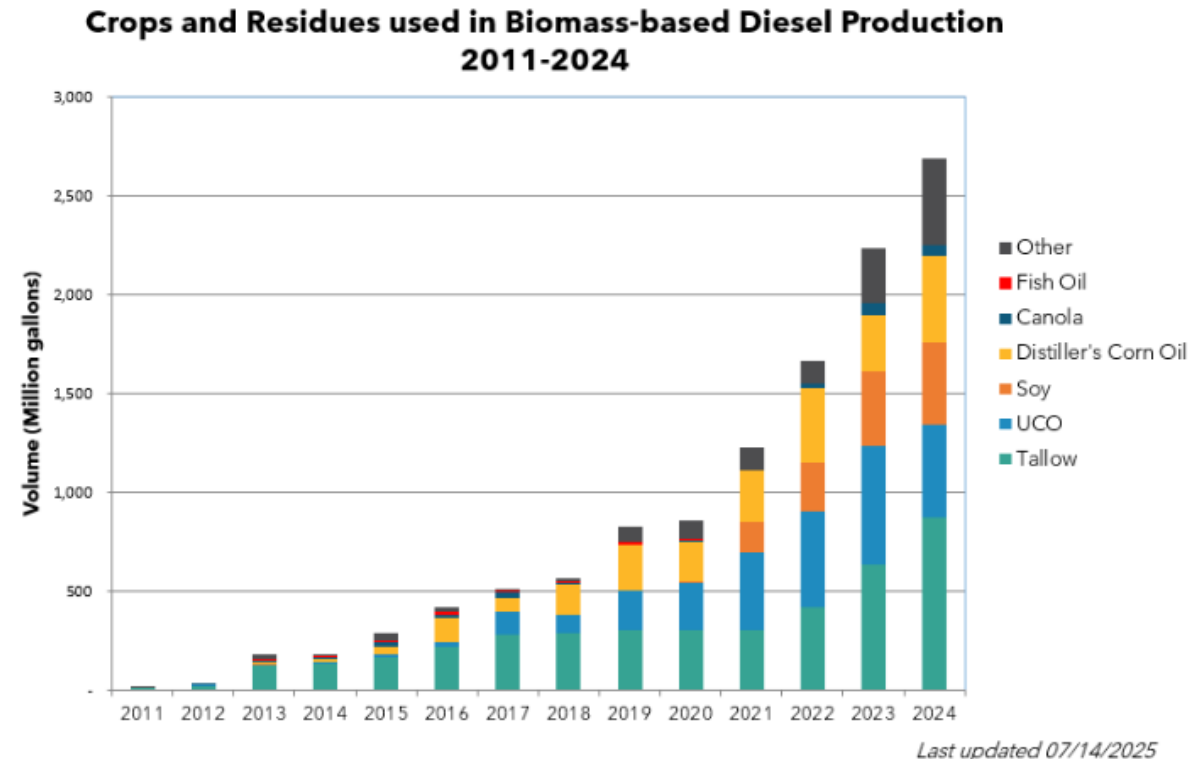
# We Received A Diverse Set of Comments

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- Strengthen carbon intensity targets and provide long-term price signals
- Maximize crediting opportunities
- **Incentivize development of innovative fuels**
- **Reduce use of combustion fuels**
- Eliminate biomethane from the program
- Continue support for biomethane and prevent stranding assets
- **Limit or cap crop-based biofuels**
- **Expand the use of crop-based biofuel crediting**
- Concentrate health and economic benefits in communities burdened by current transportation system
- Provide a mix of low-carbon transportation incentives to communities

# Biomass-based Diesel Feedstocks in LCFS

- Biofuel production should not come at the expense of deforestation or food production
- Since inception, program designed to encourage use of waste-based feedstocks and accounts for land use change emissions associated with crop-based biofuels
- CARB staff solicited feedback on crop-based biofuels throughout recent regulatory update and added new sustainability guardrails
  - Sustainability Certification requirements
  - Crediting limits on crop-based BBD



# Board Resolution 24-14

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*Be it further resolved that the Board directs the Executive Officer to convene a public forum in the next 12 months on the latest science on land use change related to transportation fuels and the impact on greenhouse gas emissions, including the most commonly used models, such as the Global Trade Analysis Project (GTAP) model, and to consider how best to mitigate any risks of harmful land use impacts or food market conflicts identified, for consideration in a future LCFS update. This should include a public discussion and consider viewpoints from industry, environmental advocacy groups, academia, and government agencies such as the United States Department of Agriculture*

<https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2024/res24-14.pdf>

# Agenda for Today's Convening

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## Panel 1: 9:10 – 10:50 AM

- Recent Research on Domestic and International Land Use Change (LUC)

## Panel 2: 11:00 – 12:00 PM

- International Jurisdictions' Perspectives

## 12:00 – 12:50 PM - Break

## Afternoon Intro: 12:50 – 1:00 PM

- Welcome back and LUC assessment research project

## Panel 3: 1:00 – 2:35 PM

- Deep Dive: Operationalizing LUC – Risks and Tools & Modeling Land Use Change

## Panel 4: 2:40 – 3:45 PM

- Modeling Novel Crop Feedstocks

## Panel 5: 3:50 – 4:40 PM

- UCO Sustainability and Traceability

## Public comment: 4:40 and onwards

- Public Comment
- Wrap-Up and Next Steps

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



# Questions and Comments

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- Panel topics and questions based on feedback and comments received during last LCFS rulemaking
  - Received hundreds of comments on Land Use Change - see [LCFS FSOR Appendix B](#)
- CARB staff will take additional public comments today and in online comment docket
- Public Comment Docket closes at 5:00 p.m. Nov. 21<sup>st</sup>
  - Will help inform staff's consideration of next steps
  - <https://ww2.arb.ca.gov/public-comments/lcfs-land-use-change-public-forum-november-6th-2025>

