



October 30, 2020

**Re: Colorado Greenhouse Gas Pollution Reduction Roadmap; Public Review Draft
September 30, 2020**

Via email: climatechange@state.co.us.

On September 30, 2020, Colorado released a public comment draft of its Greenhouse Gas Pollution Reduction Roadmap which details early action steps the state can take toward meeting the near-term goals of reducing greenhouse gas (GHG) pollution 26% by 2025 and 50% by 2030 from 2005 levels. The state is seeking comment on additional action steps to reduce GHG pollution and reap the full benefits of swiftly and equitably transitioning to a clean energy economy.

The Renewable Fuels Association (RFA) is the leading national trade association representing U.S. ethanol producers. Its mission is to advance the development, production, and use of low-carbon ethanol by strengthening America's ethanol industry and raising awareness about the benefits of renewable fuels. Founded in 1981, RFA serves as the premier forum for industry leaders and supporters to discuss ethanol policy, regulation, and technical issues. RFA's 300-plus members are working daily to help America become cleaner, safer, more energy secure, and economically vibrant.

RFA appreciates the opportunity to provide comments and are supportive of Colorado's efforts to reduce GHG pollution. In addition to electrification initiatives proposed as part of Colorado's GHG reduction plan and clean trucking strategy, we recommend that the state promote the increased use of low-carbon liquid fuels like ethanol. Affordable low-carbon ethanol is available today for the transportation sector to help transition to the clean energy economy.

RFA believes that renewable fuel, especially ethanol, can further decarbonize passenger cars and light-duty trucks today and in the near-term future. Promising research and development initiatives show ethanol can also power medium duty and heavy-duty engines in the future as well. Already, ethanol is responsible for reducing climate change emissions from the nation's transportation by more than 40 million metric tons of CO₂-equivalent annually.

According to the California Air Resources Board, Oregon Department of Environmental Quality, and U.S. Departments of Energy and Agriculture, today's ethanol reduces greenhouse gas emissions by an average of 35-50% compared to petroleum fuels and is on a technological curve to be carbon neutral or even carbon negative. California's Low Carbon Fuel Standard (LCFS) program has encouraged lower carbon intensity (CI) fuels, and investment in new

technologies has led to a reduction of more than 30% in ethanol's average CI score since LCFS enforcement began in 2011. In both California and Oregon, the LCFS and Clean Fuel Standard (CFS), respectively, have also driven significant growth of E85 (85% ethanol blends for Flex Fuel Vehicles), which boasts a 70-75% reduction in carbon intensity per mile over gasoline.

The ethanol sector is continuing to lower its carbon intensity, just as the decarbonization of hydrogen production and electricity generation has accelerated. Intelligent policy like California's LCFS is incentivizing ethanol producers to integrate technologies like carbon capture and sequestration (CCS), combined heat and power ("cogeneration"), and biogas thermal energy systems. Further, using low carbon ethanol to power agricultural equipment will further reduce the carbon intensity of ethanol production. As a result, ethanol will continue to offer economically competitive carbon mitigation even in a world of increasing sustainability. Finally, promoting the efficient use of alcohol fuels will provide near immediate emissions benefits as well as support for future pathways of circular energy production and complete decarbonization.

Additionally, a LCFS / CFS would drive new investment by renewable fuel companies. This would be critical in providing consumer choice for Colorado drivers. Ethanol fuel's low cost also provides a fair choice for consumers who may find purchasing a new electric vehicle to expensive. The beauty of the LCFS/CFS policy model is that it is fuel- and technology-neutral. It takes a market-based approach and does not dictate what fuels and vehicles must be used to reduce emissions. Rather, the LCFS establishes increasingly stringent annual requirements for decreasing the carbon intensity of transportation fuels used in the state. How fuel producers and suppliers meet those annual standards is entirely up to them, meaning the lowest-cost options for reducing carbon emissions will typically win out. That competition means consumers continue to have choices when it comes to vehicles and fuels.

Low carbon ethanol fuels like E15 for light duty vehicles and E85 flex fuels for flex fuel vehicles help meet carbon reduction goals today. Ethanol is the lowest cost, highest octane fuel additive available. EPA has approved the use of E15 for 9 out of 10 cars on the road today. Consumers will also benefit from more competition and greater savings as E15 and E85 use expands.

Heavy-duty, long-haul trucking and other off-road applications which are also contributors to GHG, PM and NOx emissions, can be converted to using cleaner energy at a faster pace if low-carbon liquid fuels are used. Very substantial gains are possible for both GHG and criteria emissions – with the speed of implementation being the largest driver of near-term carbon displacement. Not waiting for the required infrastructure associated with electrification and/or hydrogen-based alternative will speed the adoption and resulting mitigation effects.

Colorado, like the rest of the United States, has abundant liquid fueling infrastructure. This infrastructure is largely already compatible with higher-alcohol fuels. The U.S. already produces large quantities of low carbon ethanol. Alcohol fuels, using newly developed combustion technology, can now be used at 100% levels in both large displacement compression-ignition

(diesel) engines¹ as well as more moderate displacement spark-ignited engines – thus eliminating petroleum fuel and its attendant emissions.

The internal combustion engine (ICE) is far from dead – the fuel just needs to be changed. Compression-ignition engine technology is now commercially available at 50% efficiency. This rivals hydrogen fuel cell efficiency, and can enable range-extended, small-battery, electrified vehicles that are much more cost effective and less dependent on infrastructure buildouts. Using and focusing on liquid fuels reduces the cost, volume, and weight challenges of on-board pressure vessel storage, which must be used with gaseous fuels.

A properly designed, fuel neutral, LCFS or Clean Fuel Standard CFS encourages GHG reductions via market forces. LCFS/CFS programs are already in effect in California, Oregon and British Columbia, and have been discussed in other parts of the U.S., including Washington, New York and the upper Midwest. A science-based standard can drive technological innovation, stimulate investment in clean energy, reduce climate change emissions from the transportation sector, and decrease fossil fuel consumption.

Colorado should give more consideration to the rapid adoption of a LCFS / CFP as an early action step in the state's plan to reduce GHG emissions. These programs enable an increasingly diverse fuel supply, thus creating competition, encouraging innovation and developing greater market opportunities while improving air quality.

Sincerely,

Kelly Davis
Vice President of Regulatory Affairs

¹ <https://www.clearflameengines.com/>