Renewable fuels

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Renewable fuels are a crucial driver of decarbonization in the transportation sector, the largest source of emissions in the US. Thanks to state-wide Clean Fuel Standard (CFS) policies, 2024 has been marked by some incredible signs of progress. In California, which implemented its Low Carbon Fuel Standard (LCFS) in 2007, renewable diesel now makes up **75% of all diesel sold**. In the state of Washington, electricity, specifically for charging electric vehicles, is the fastest growing form of energy used.

Market-driven initiatives like CFS policies are the only known policies that are tangibly reducing the carbon intensity of transportation. This cannot be overstated. Mandate-driven policies like those in the EU are showing limited success, and Cap-and-Invest programs don't address carbon intensity in the same way.

The renewable fuels sector still has a long way to go to reach global net zero goals – the space continues to be plagued by challenges in investment, cost competitiveness, and scale. However, with renewed dedication to science-based rhetoric, technical neutrality, and the advancement of market-driven programs, renewable fuels have the potential to quickly and dramatically reduce transportation emissions in 2025 and beyond.

Renewable fuels in 2025: Start, stop, or continue

Start: Taking concrete actions using tools available today. 2030, the first major checkpoint on climate action, is just over 5 years away. The time to act is now, irrespective of who's president in the US. Start leveraging mechanisms, like clean fuel programs, that are proven to reduce carbon intensity and improve air quality in the communities where you operate. If clean fuels markets are limited in your territory, build coalitions to pass state-wide CFS policies.

Stop: Letting perfect be the enemy of the good. Renewable fuels (molecules) often come under scrutiny for being an imperfect solution to decarbonization because, unlike electrification (electrons), they still create tailpipe emissions. The reality is that renewable fuels are what's needed now, particularly in sectors like long-haul trucking and aviation.

If you mapped the average carbon intensity of an electric truck traveling across the country on Interstate 90, that truck would emit 83 grams of CO2 per megajoule. A truck powered by renewable fuels would emit 23 grams of CO2 per megajoule, **almost 4X less**. This isn't to say that electrification is an inferior alternative to renewable fuels. However, electrification technology is still working through sizable barriers that curb adoption at scale, including limited supply of clean energy, charging infrastructure constraints, and more.

Continue: Embracing the science of decarbonization. Renewable fuels and CFS policies have become subject to politicization and non-science-based language from both sides. Be wary of false arguments claiming there are no air pollution benefits to renewable fuels or promoting electrification as the single solution. Instead, let the *science* dictate the fastest path to decarbonization. Clean fuel programs work because of their science-based, technological neutrality, not because they prioritize one solution over another. And the science is clear – renewable fuels and CFS policies substantially lower the carbon intensity of the transportation sector *and* deliver tangible benefits to human health through the reduction of harmful pollutants like SOx, NOx, carcinogens, and particulate matter.

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Renewable fuels trends to watch for in 2025

Prioritization of molecules over electrons. Renewable energy will come under close examination during the next administration. However, Trump's prioritization of energy security bodes well for molecule-based clean fuels. While the Republican party shows particular interest in emerging fuels like hydrogen and carbon capture, energy security is a bipartisan issue, and all clean fuels are on the table.

Doubling down on action in clean fuel markets. Next year, expect to see the West Coast and other emerging clean fuel markets double down on action and growth. Organizations involved in these markets should strategically leverage credits offered by CFS policies and other incentives to catalyze their decarbonization journeys.

Several promising examples are already coming to light. For instance, capitalizing on Minnesota's Sustainable Aviation Fuel Credit and a $16.8M Inflation Reduction Act grant from the Federal Aviation Administration (FAA), Delta, Bank of America, Xcel Energy, and Ecolab recently launched the Minnesota SAF Hub to create the first SAF blending facility in the state.

Acknowledgement of the need for a systems-level approach to SAF. Airlines are increasingly recognizing that offtake agreements alone won't move the needle on SAF, and as the sheer scale of the challenge sets in, markets are beginning to cool. SAF volumes from offtake agreements made during 2024 are on track to be **over 7X** lower than in 2023.

Securing mutually beneficial, long-term offtakes is just one aspect of the SAF transition – it also requires supportive policy, reliable feedstock supply chains, infrastructure upgrades, and rapid research and development. In the face of cooling markets, airlines and other SAF users should embrace a systemic approach, focusing on pillars change that could tackle the root causes of offtake challenges.

Inflection point of project development from federal funding. The Federal Aviation Administration's FAST Grants, made possible by the Inflation Reduction Act, allocated **nearly $300M** to 36 SAF projects across the country this year. This significant injection of capital will start to bear fruit in 2025, marking an inflection point in the development of SAF infrastructure, supply chains, and technologies.

The renewable fuels sector is undergoing a reality check. The window to act is closing, and investment in renewable fuels remains skeptical in an uncertain geopolitical landscape. As ExxonMobil CEO Darren Woods mentioned in an interview urging President Trump not to withdraw the US from the Paris Agreement (again), the cyclical swinging back and forth of the pendulum as administrations change *"is extremely inefficient."* This is especially true for the renewable fuels sector, which relies on government policies to incentivize investment in the transition.

Yet in a space riddled with uncertainty and risk, there are growing pockets of opportunity. Driven by the unification of CFS policies, the West Coast is positioned to reduce the carbon intensity of the transportation sector in that territory by **well over 20%** over the next decade. Regardless of what happens at the federal level, momentum at the state level is pushing on, and next year provides organizations with a real opportunity to amplify their impact with proven, market-based programs and technologies that already exist today.