



# The Sol Standard:

Key Insights into LCFS and  
Clean Fuels Markets

January 2022

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# 1. California LCFS Price Trends

## Current Outlook and Early Projections for 2022

While the end of 2021 brought a significant dip in LCFS credit prices along with market volatility, early signs point to some stability in 2022. Current market pricing is in the upper \$140s depending on delivery date and trading activity has picked up the first few weeks of the new year. Based on our research and market engagement, Sol expects:

- **Buyers to remain bearish in the short-term** - With the drop in pricing in the 2nd half of 2021 and the quickly growing supply of LCFS from renewable diesel, renewable natural gas (“RNG”), and electricity, LCFS credit buyers are likely to stay bearish in the near-term.
- **Trading activity to increase** – With the slight uptick in pricing over the first few weeks of January, trading activity has picked up and is expected to continue. With the 2021 compliance year ending in April 2022, obligated entities will likely become more active in the market as they move to close out their annual compliance requirements.
- **Pricing to stabilize or go up slightly, but not to 2020 or early 2021 levels** – While the movement on price and activity has been positive in early January, the chance that pricing returns to 2020 or early 2021 levels is low. There may be some price increases towards the spring or close of the compliance year, but how much of an increase remains to be seen as many obligated parties continue to draw down on banked supply.

State and Federal policy shifts and the potential of new markets will play a key role in 2022.

- **Potential amendments to California’s LCFS program may boost LCFS credit pricing** - The California Air Resources Board (“CARB”) is considering a host of changes to the LCFS program including adding a declining carbon intensity (“CI”) schedule post-2030 as well as steepening the curve pre-2030. Either of these changes to the CI schedule would accelerate the pace at which obligated parties must decarbonize their fuels, which would likely lead to an increase in market demand for LCFS credits. While any changes to the CI schedule will likely not go into effect until at least 2024, when a CARB decision is announced, market activity is likely to shift based on the announcement alone and market participants may see a boost in LCFS pricing.
- **Potential changes at the Federal level may increase LCFS credit supply from renewable fuels and electric vehicles** – The market is currently waiting to see how changes to the Federal Renewable Fuel

### CA LCFS Pricing January 25, 2022

Delivery Schedule	Bid	Ask
Immediate Delivery	\$149	\$153
Q1 2022 Delivery	\$147	\$151
Q2 2022 Delivery	\$148	\$151
Q3 2022 Delivery	\$148	\$152
Q4 2022 Delivery	\$142	\$149

Standard (“RFS”) may play out, but initial signals indicate a potential increase in support for biofuel. Further, significant funding is set aside in the Bipartisan Infrastructure Law to increase buildout of the nation’s electric vehicle (“EV”) charging network. Continued significant growth of renewable diesel, RNG, and electricity as a transportation fuel is expected in 2022 and will be accelerated by federal law changes and implementation of federal programs. These alternative transportation fuels will continue to push up supply of LCFS credits, which in the short-term could keep a downward pressure on pricing.

*While our newsletter has a heavy focus on California given its size and maturity, please reach out to us if you have questions regarding the OR, BC or other clean fuel markets*

- New markets opening may shift both LCFS credit supply and demand dynamics in California –**  
 There is a flurry of activity happening around new LCFS and clean fuels programs around the country and in Canada. As new markets open, there will likely be a shift in transportation fuel supply to California as suppliers re-evaluate their sale options. Particularly Canada, given its large market size and new Clean Fuel Standard (“CFS”) coming into effect in 2023, could play a significant role in shifting California’s LCFS market. The Canadian program, when open, would be the 2<sup>nd</sup> largest clean fuel program in North America, second only to California.

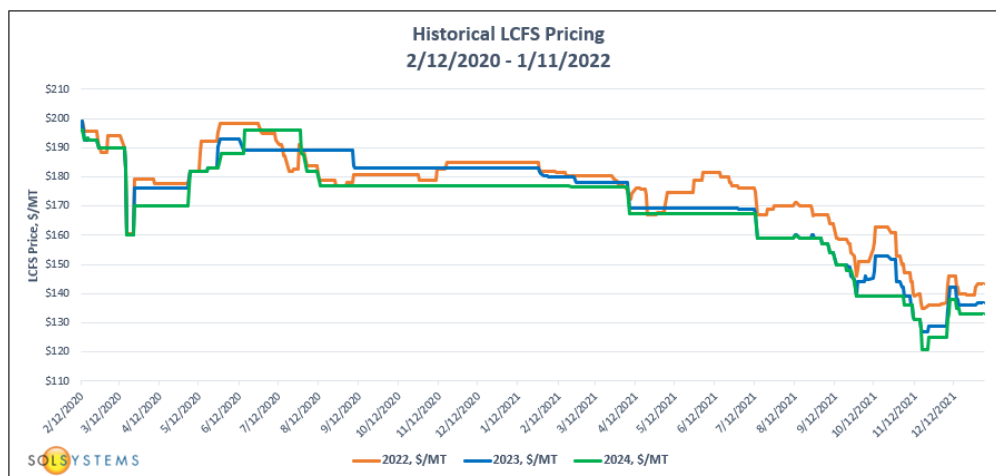
Sol Systems will continue to track future market and policy activity, but customers are encouraged to reach out to discuss how potential changes may impact your company’s LCFS procurement or monetization strategies.

## A Look Back, 2021 a Year in Review

A review of 2021 is provided below. The insights from this section highlight additional context for the 2022 outlook discussed above.

### 2021 Spot Pricing with Immediate Delivery

2021 brought steep declines to CA LCFS spot pricing as well as some interesting trading dynamics. While the year started off with spot prices in the low \$180s to high \$190s (close to 2020 pricing levels), by the end of the year, pricing hovered in the high \$130s to low \$140s. Sol saw bids fall as low as \$137 in December, about a 30 percent drop from January 2021 pricing. However, following a December 7<sup>th</sup> CARB workshop on potential changes to the LCFS program, the last few weeks of December saw a slight uptick in pricing (\$140-\$150 range) to close out the year. The graph below shows historical pricing for the past two years.



Data Sourced from CaliforniaCarbon.info on 1/5/2022



The steady drop in pricing, which started in mid-August and continued through December, seemed to have come as a surprise to many market participants. On the sell side, LCFS generators held onto their credits with expectations and hopes that prices would rise back to \$185+. On the buy side, LCFS deficit holders were delaying their procurement of credits with expectations/hope that prices would continue to fall. As a result, trading activity slowed significantly. Sol observed several no-bid periods throughout the 2<sup>nd</sup> half of 2021 (specific periods of time where sellers have offers on the table, but buyers have no active bids in the market), particularly in November which was an unusually quiet month. What little activity was present seemed to have come from speculators bidding low prices on the various trading exchanges rather than actual deficit holders (obligated entities required to participate in the LCFS by CARB) seeking to meet their compliance requirements.

## 2021 Spot Transactions with Future Delivery

With expectations of continued price decline by buyers and projections of supply (more details below), spot pricing for transactions with future delivery was in a period of backwardation for the 2<sup>nd</sup> half of 2021. Backwardation in commodity markets is when contracts for immediate or nearer-term commodity delivery are priced at a premium to future delivery. In other words, the commodity is worth more now than later. Futures activity in the second half of 2021 was 5.5 percent below spot pricing for delivery in 2022, 10.4 percent below spot pricing for delivery in 2023, and 13.2 percent below spot pricing for delivery in 2024. Futures trading in LCFS doesn't typically go out much farther than a few years and overall futures trading volume was low in 2021.

## 2021 Long-Term Strip Activity

Interest in long-term activity also waned with the decline in spot pricing. While long-term activity in LCFS has never been as robust as in other environmental commodity markets or products, during Spring and early Summer 2021, both sellers and buyers seemed to have interest in locking into long-term strips. However, there seemed to be a bit of a mismatch on preferred tenors between the sell side and buy side. On the sell side, LCFS credit generators wanted to lock in 10-15 year strips, often for project financing purposes. On the buy side, LCFS deficit holders preferred shorter tenors, typically 2-3 years, or in some rare instances up to 5 years. Unfortunately, as spot prices started to drop in late Summer, long-term strip pricing also dropped, thereby reducing interest in the market.

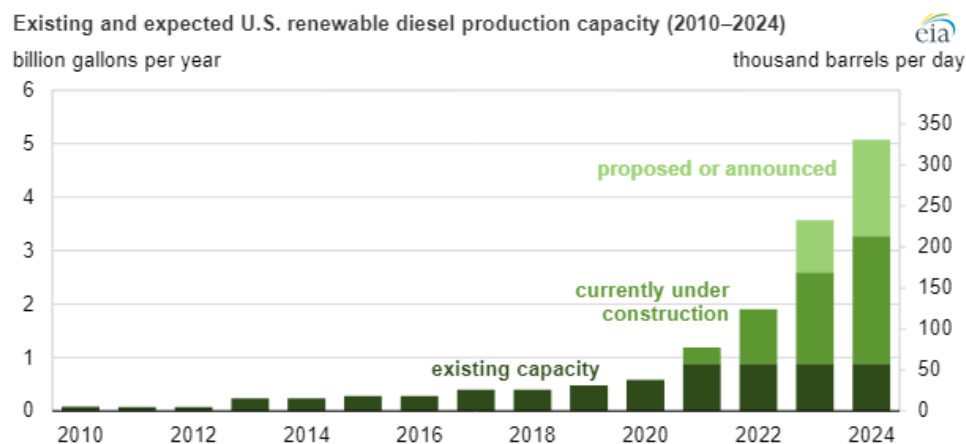
*Sol Systems is actively working to bring more long-term solutions to the LCFS market. If you are looking for fixed price or upfront strip solutions, please reach out to our team. We would be happy to discuss your project with you and see what solutions might be available.*



## Factors Contributing to 2021 Pricing & Trading Dynamics

Several factors contributed to 2021 market dynamics:

- Increase in Supply of Renewable Diesel and Renewable Natural Gas (↑ Impact on Supply and ↓ Impact on Demand)** – Renewable diesel and RNG projects are expected to grow significantly in the coming years. In July 2021, the Energy Information Agency (“EIA”), [released their projections](#) for expected renewable diesel production capacity in the U.S. The graph below shows both existing capacity as well as capacity under construction and proposed projects. While some of the proposed projects are likely to fall through due to reasons including financing or feedstock constraints, the projects under construction alone would increase existing capacity by 2.4 billion gallons by 2024 (over a 2X increase from current levels).



Similarly, RNG production in the U.S. is also growing quickly. The graph below from the RNG Coalition shows the trajectory of RNG projects in the U.S. from 1982 through 2020. Much of the sector’s growth can be attributed to the last 5-6 years. Between 2018 and 2020, the number of operational projects in the U.S. increased by over 80 percent.



As of December 2021, there were 200 operational RNG projects in the U.S. The RNG Coalition is expecting this rapid buildout to continue with approximately 100 new RNG projects potentially coming online each year through 2025 (David Cox, Founder, RNG Coalition).

Growth in both renewable diesel and RNG is due to programs such as the Federal RFS as well as LCFS programs. Much of the fuel supply from these sectors is expected to come into California which will increase the

volume/supply of LCFS credits generated. As these fuels start to comprise more of the CA transportation fuel mix, use of gasoline and diesel will likely go down, reducing obligated party requirements and LCFS demand.

- Increase in Electricity as a Transportation Fuel (↑ Impact on Supply and ↓ Impact on Demand) -**  
 While driving in California has decreased during COVID, when people or companies do drive, they are increasingly opting for electric vehicles, further driving down demand for fossil fuels. California continues to set the pace in the U.S. for EV adoption. As Of November 1, 2021, California represented almost 44 percent of total national EV sales, and 2021 was the state's highest year on record for EV sales with over 187,000 vehicles sold in the first 3 quarters of 2021 alone (Veloz, October 2021). As a result, the state is also leading the nation on EV infrastructure buildout with over 76,172 EV public and shared private chargers installed and 52 hydrogen stations. Shared private chargers are those that are privately owned, but open to a wider net than just the property owners (ex. employees, apartment building residents, the public, etc.).

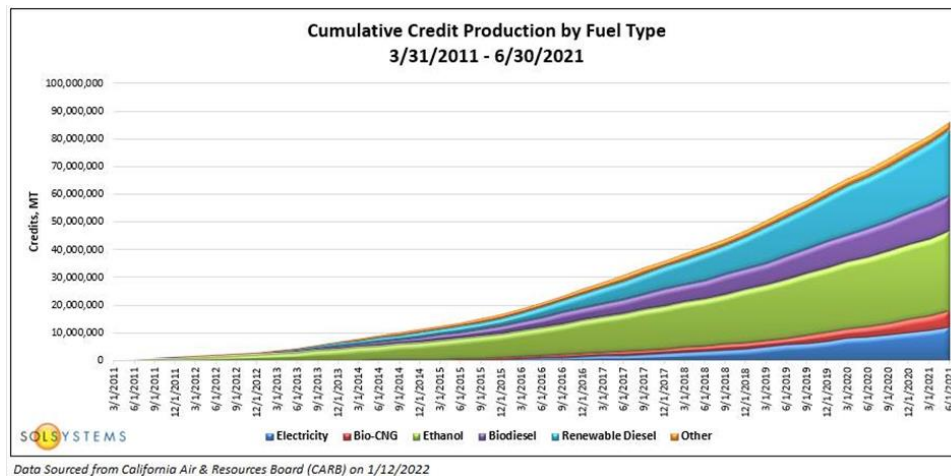


Source: Graphic from Veloz, utilizing California Energy Commission Data, Nov. 2021

Rapid pace of EV adoption is expected to continue in California. In September 2020, [Governor Newsom \(D\) signed an Executive Order](#) requiring all new sales of passenger vehicles to be zero-emission by 2035 and operations of medium and heavy-duty vehicles to be zero emission by 2045 (except for drayage trucks which have a 2035 target). Aggressive targets are also set for EV charging infrastructure. In June 2021, [a report from the California Energy Commission](#) noted that 1.2 million chargers would be required for passenger vehicles by 2030 to meet state goals, along with 157,000 chargers for medium and heavy-duty vehicles. The state is currently running behind its targets and is working to create incentives/funding programs to accelerate deployment.

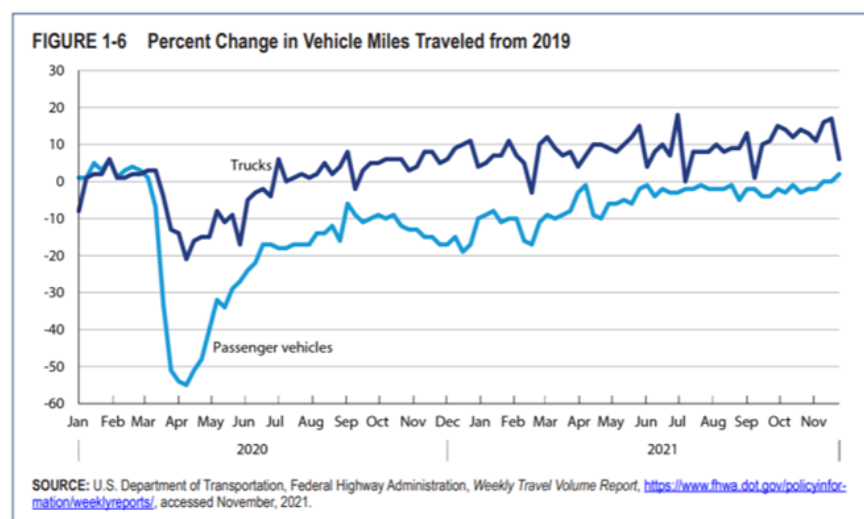


As EV adoption in California grows, this will impact both supply and demand of LCFS credits. On the supply side, more LCFS credits generated from electricity will come into the mix. As can be noted from the graph below, electricity is a quickly growing subset of LCFS credit generation. LCFS credits generated from electricity in 2021 comprised ~20 percent of the overall mix (based on Q1 and Q2 2021 data).



On the demand side, as more people and companies utilize electricity as a transportation fuel, the consumption of gasoline and diesel will reduce, thereby driving down demand for LCFS credits.

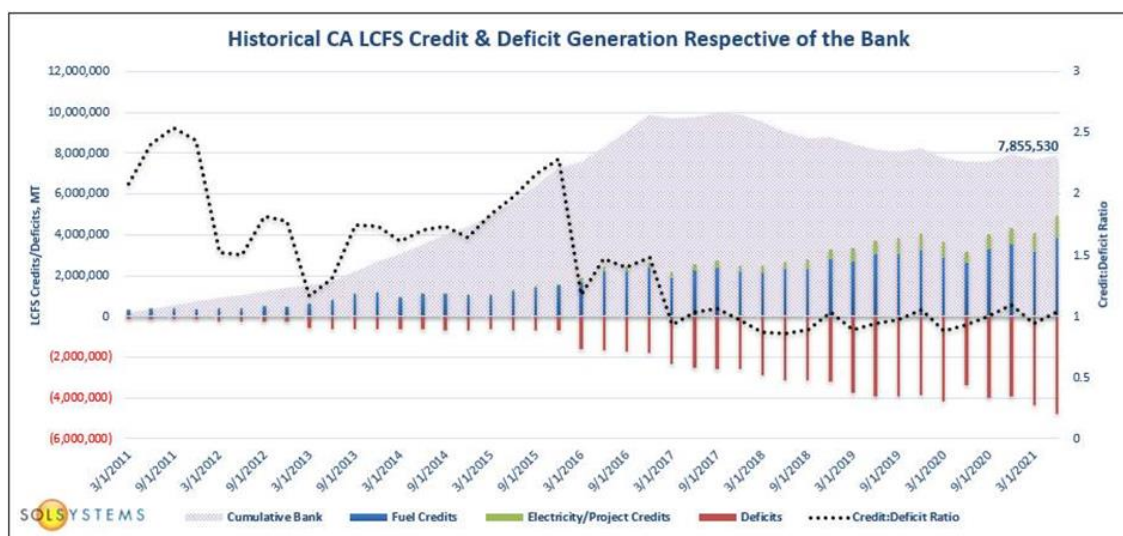
- Decrease in Gasoline & Diesel Consumption (↓ Impact on Demand)** – Over the past few years, there has been a decrease in the consumption of gasoline and diesel. As sales of fossil fuels go down, obligated party requirements also go down, thereby reducing LCFS credit demand. COVID is one of the factors impacting gasoline and diesel consumption. As most companies continue operating in full or partial remote work status, many people are not driving as much as they were a few years ago. According to the Bureau of Transportation Statistics, the number of people staying at home increased by 40-60 percent during COVID over 2019 levels and as a result vehicle miles driven also decreased. The graph below shows the % change in miles traveled from 2019 (California tracked close to the national average on stay-at-home rates and changes in miles traveled). The impact is more prominent in the passenger segment as medium and heavy-duty vehicles still had to operate for shipments. 2021 saw some improvement over 2020, but overall travel was still lower than pre-pandemic levels and the emergence of Omicron is likely to keep levels low for the coming months.





Another factor contributing to a decrease in use of fossil fuels is the increase of alternate transportation fuel sources such as renewable diesel, RNG, and electricity as described above. As these alternate fuels play a larger role in the transportation sector, reliance on gasoline and diesel will go down (which is one of the intended impacts of the LCFS program).

- Drawdown on Bank (↓ Impact on Demand)** - For most of the LCFS program's history, credit generation outpaced deficits (this was intended by program design). From 2011-2015, quarterly credit production measured nearly twice of the observed deficit generation which contributed to the buildup of the credit bank. However, as can be noted from the graph below, this trend has shifted the past few years with deficit volumes slightly outpacing credit production volumes. As such, there seems to be an increased draw on the credit bank. Since Q3 2017, the cumulative LCFS credit bank has eroded approximately 21 percent from its 9.94MM peak to its most recent observed level of 7.85MM credits. The ability for obligated parties to drawdown on the bank keeps downward pressure on market LCFS pricing.



Data Sourced from California Air & Resources Board (CARB) on 1/12/2022

## 2. Policy Tracker

### Existing Markets

*The West Coast is currently paving the way for low carbon fuel standards in the country.*

#### California

On December 7, 2021, CARB held a stakeholder [workshop](#) to outline potential future changes to the LCFS program with the goals of (1) aligning with long-term state-wide climate goals and further incentivizing private investment in low-carbon fuels, (2) accelerating the transition to zero-emission vehicles in line with Executive Order N-79-20, (3) supporting exportability of the program to other regions, (4) harmonizing with federal policy signals, (5), reflecting changes in technologies, data, and stakeholder feedback, and (6) streamlining implementation. Some of the specific changes CARB is contemplating include establishing a declining carbon intensity schedule post-2030 and steepening the schedule pre-2030, inclusion of low-CI hydrogen in book-and-claim, and promotion of electricity storage. All of these changes appear to be positive and the changes to the carbon intensity reductions schedule, in particular, will likely help boost LCFS demand in the state. The earliest any changes would go into effect would be 2024 pending approval of a scoping plan in 2022. Further stakeholder workshops are expected in the coming months as CARB finalizes program changes.

#### Oregon

Oregon's clean fuels program ("CFP") was launched in 2016 with a carbon intensity reduction goal of 10 percent by 2025 from 2015 levels. In March 2020, Governor Brown (D) signed Executive Order 20-04, directing the Department of Environmental Quality ("DEQ") and the Environmental Quality Commission ("EQC") to expand the CFP to achieve carbon intensity reductions by at least 20 percent below 2015 levels by 2030, and 25 percent below 2015 levels by 2035. A final rulemaking to evaluate and implement a path to extend existing targets is expected in late 2022. To inform that rulemaking, on December 22, 2021, DEQ announced a series of [topical workshops](#), beginning January 20, 2022. Topics will include reporting-related issues, electricity, GREET (a model that many clean fuels programs utilize to analyse transportation emissions), and biogas and RNG.

Oregon also adopted/implemented a few key changes in 2021 that will impact Sol's CFP clients. First, Oregon now allows market participants to purchase and retire renewable energy credits ("RECs") to demonstrate the use of renewable electricity in charging EVs. While the process is similar to California's book-and-claim program in many ways, there are three primary differences. RECs utilized for Oregon's CFP must be:

- Certified by Green-e
- Located in the West Electricity Coordinating Council
- Generated from facilities that are from 2015 or newer

Second, starting with the 2021 compliance year, some market participants will be required to utilize 3<sup>rd</sup> party verification services to participate in the CFP. More details can be found [here](#).

#### Washington

In May 2021, Washington enacted a CFP, making it the third state in the U.S. with a low carbon fuels program. The CFP, which is set to begin in January 2023, targets 20 percent reductions in the carbon intensity of transportation fuels by 2038 compared to 2017 baseline figures. The Department of Ecology is leading the draft rulemaking process and is currently holding a series of stakeholder meetings to solicit feedback on CFP design. The first two meetings were held in [October](#) and [November](#) 2021 with discussions around which fuels are included and opt-in fuels, exemptions, and deficit and credit generating activities. There was also discussion around

delaying compliance obligations for the first year of the program to allow participants to get familiar with program mechanics and test out the state's tracking and reporting system. [Draft regulations](#) were released following the November meeting. While a few more stakeholder meetings remain before regulations are finalized – one on January 27, 2022, and one on February 23, 2022 – expectations are that once the process concludes, the CFP will look closer to Oregon's program rather than California's.

## Canada

Canada published draft regulations for its clean fuel standard in December 2020 with expectations of final regulations to be posted by December 2021. However, this past fall, Environment and Climate Change Canada ("ECCC"), the Canadian government agency that oversees environmental regulation, noted there were delays and final regulations would not be released until Spring 2022. Despite the delay on final program design, ECCC still expects the program to go into effect at the end of 2022 and trading to commence in early 2023. The draft clean fuel standard aims to reduce the carbon intensity of Canada's transportation fuels 13 percent by 2030 relative to 2016 levels. Once open, the Canadian program would be the second largest in North America, after California.

## British Columbia

British Columbia's LCFS rounds out the West Coast (when combined with CA, OR, and WA, all 4 programs are considered part of the Pacific Coast Collaborative). Established in 2008 and implemented in 2013, the BC LCFS is comprised of two pieces of legislation – the Greenhouse Gas Reduction Act and the Renewable and Low Carbon Fuel Requirements Regulation. Long hailed as one of the more successful emission reductions policies in the Province, the LCFS was amended in 2020 to extend the LCFS for an additional ten years and to put in place a new mandate for carbon intensity reductions of 20 percent by 2030 over 2010 benchmarks. In addition, the amendments also set a requirement that gasoline must have 5 percent renewable content and diesel must have 4 percent.

Perhaps of keen interest to Sol clients, the LCFS was amended again in July 2021 to clarify who the fuel supplier is for electricity supplied for EV charging. Beginning January 1<sup>st</sup> of this year, the supplier of electricity is the person/entity that provides electricity through the fuel supply equipment (i.e. chargers). While there are some exceptions to this (residential units, trains, and trolley buses), this amendment allows for a greater pool of stakeholders to claim LCFS credits from EV charging (similar to California's program). British Columbia's LCFS would continue to operate even once a national clean fuel standard goes into effect for Canada.



## Emerging Markets

*Momentum has been growing in these states to adopt a low carbon fuel standard. While differences in targets, carbon intensity reduction schedules, included fuel types, and other factors exist, all low carbon fuel standard/clean fuels programs in consideration largely mimic that of California's.*

### Colorado

The Colorado Energy Office completed an [LCFS feasibility study](#) in September 2020. While discussions continue regarding how to decarbonize the Colorado transportation system, no major activity has taken place since the study concluded.

### Illinois

In August 2020, Illinois released a document called "[Putting Consumers and Climate First](#)," which outlines Governor Pritzker's (D) "Eight Principles for a Clean & Renewable Illinois." Principle #5 outlines 11 proposals supported by the Governor to electrify and decarbonize the transportation sector in the state. One of the proposals calls for Illinois to "support efforts to establish a Midwestern low carbon fuel standard." While a few bills have been introduced in the house since then, none of them have been an LCFS per se. However, with the passing of Illinois' historic [Climate and Equitable Jobs Act](#) in September 2021 with a goal to have the state run on 100 percent clean energy by 2050, more activity around clean transportation fuels is expected in the future.

### Iowa

Given Iowa's position as the #1 ethanol and biodiesel producer in the country, there is strong support from farmers and other stakeholders in the state for a clean fuel standard. In February 2021, Governor Reynolds (R) introduced the Iowa Biofuels Standard with an aim to require fuels sold in the state to contain higher blends of ethanol and biodiesel. While the bill passed several committees, it failed to make it out of the legislative session. There is expectation that another bill will be introduced in the near future.

### Minnesota

As Minnesota consistently ranks as a top 5 state for ethanol production and top 10 state for biodiesel production, implementation of a clean fuel standard would have a positive impact on the growth of local producers. Several bills have been introduced but have failed to move forward. Most recently, in March 2021, a bill called the Future Fuels Act was introduced in the House by Representative Todd Lippert (D) and in the Senate by Senator Dave Senjem (R) with a target of reducing the carbon intensity of transportation fuels sold in Minnesota by 20 percent by 2035 using 2018 baseline figures. While the Future Fuels Act passed in the House, it stalled in the Senate. However, Senator Senjem is expected to reintroduce the bill again in 2022, but there is not indication that the bill will become law in 2022.

Building off recent momentum, in October 2021, Governor Walz (D) directed the Minnesota Department of Agriculture and the Minnesota Department of Transportation to engage stakeholders to inform a clean fuel standard in the state. The agencies were tasked with providing a report by February 2022 with recommendations around if and how the state could move forward with a clean fuel standard.



## Nevada

Nevada is in the very early stages of considering an LCFS. In December 2020, the Nevada Department of Conservation and Natural Resources released the first ever [“State Climate Strategy.”](#) The report notes that an LCFS could be a tool utilized to help reduce emissions from the transportation sector. However, details on what steps the state may take to explore adopting an LCFS were not provided, and no major activity has occurred since then.

## New Mexico

New Mexico has high potential to be the next state to adopt an LCFS. In March 2021, the Clean Fuel Standard Act, with an aim to reduce carbon intensity of transportation fuels by 28 percent by 2040 against 2018 baseline figures, passed the senate. While the bill failed to get through the house with a final vote, Governor Grisham (D) is expected to include a clean fuel standard as a high priority agenda item in Q1 2022. Any bill will need to be introduced by February 2, 2022, to be considered this session.

To support the state’s efforts to reduce transportation emissions and to raise support going into January, the New Mexico Clean Fuel Coalition (“NMCFC”) recently formed with support from 21 national and local companies and organizations. NMCFC was formed in conjunction with the [Low Carbon Fuels Coalition](#).

## New York

New York has been considering adopting a low carbon fuel standard for some time. While a bill introduced in 2021 failed to make it out of legislative session with a vote, recent activity indicates that progress on this front may happen soon. New York’s nation-leading Climate Leadership and Community Protection Act (“CLCPA”), which was signed into law in 2019, requires a net-zero economy by 2050, including transportation. The CLCPA created the Climate Action Council (“CAC”) to draft a scoping plan on achieving the state’s targets and the CAC released the [first draft of the scoping plan](#) in December 2021. One of the CAC’s recommendations for the transportation sector is for New York to consider adopting a clean fuel standard. The scoping plan is now open for public comment and a final scoping plan is expected to be released at the end of 2022.



### 3. Federal Update

#### Corn Fuel Rules Sing Mixed Tunes, but Still Hit a Few High Notes from Biden Administration

While states are increasingly taking an aggressive stance on curbing transportation-related emissions by setting up their own LCFS (or similar) programs, activity at the Federal level will continue to play a key role in how quickly the U.S. can decarbonize its transportation sector. The Federal Renewable Fuel Standard (“RFS”) is one of the primary Federal programs established to drive down greenhouse gas emissions from transportation fuels and has been a strong contributor to the exponential growth of the country’s renewable diesel and RNG sectors.

Enacted in 2005 by the Energy Policy Act and expanded in 2007 by the Energy Independence and Security Act, the RFS requires renewable fuels be mixed into petroleum-based transportation fuels in increasing amounts each year. Under the RFS, renewable fuel producers generate renewable identification numbers (“RINs”) for each gallon of renewable fuel produced and transportation fuel refiners, blenders, and importers can meet their obligations by purchasing either bundled renewable fuels and the associated RINs or simply just unbundled RINs.

Congress set the target renewable fuels goals through 2022 when the RFS was established, but gave the U.S. Environmental Protection Agency (“EPA”) the authority to adjust the volumes as it deems necessary. Recent renewable volume obligation (“RVO”) and other RFS program announcements from the EPA on December 7<sup>th</sup> sing mixed tunes for U.S. biofuel producers (much less the climate).

On a controversial note, EPA proposed retroactively cutting RVOs for 2020 and 2021, a first for the agency which has previously gone on record opposing such adjustments to prior years. COVID’s impact on transportation fuel demand was cited as a reason. Not surprisingly, the proposal was met with disapproval from those in the biofuels industry who feel that retroactive adjustments to RVOs would undermine confidence in the RFS and create a dangerous precedent, making it difficult for farmers to make investment decisions. Midwestern lawmakers, including Senators Amy Klobuchar (D-MN), Charles Grassley (R-IA), Tammy Duckworth (D-IL), and Joni Ernst (R-IA), also had strong criticism against the proposed RVO reductions and introduced a bipartisan bill in the Senate, the *Defend the Blend Act*, to stop EPA from retroactively cutting blending volumes.





On the other hand, some of EPA's announcements landed much more softly on the ears of biofuels supporters. First, EPA proposed RVOs for 2022 that are the highest total renewable fuel volumes in history, aiming to put the program on a stable trajectory that provides for significant growth. While the proposed 2022 RVOs are lower than the targets Congress set back in 2007, the volumes are over 3.5 billion gallons higher than the volume of renewable fuel used in 2020. The proposed volume of advanced biofuel for 2022 is over one billion gallons greater than the volume used in 2020. EPA also proposed adding a 250 million-gallon "supplemental obligation" to the volumes proposed for 2022 and stating its intent to add another 250 million gallons in 2023. The supplemental obligations would make up for some of the waived RVOs from 2014-2016. Second, the EPA proposed a change to small refinery exemptions ("SREs") which were originally set up to waive RVOs for small refineries producing less than 75,000 barrels of fuel a day. However, many large refineries with multiple small facilities often sought SREs by applying for exemptions at each individual facility level as a way to bypass their overall aggregate footprint as a company. To cut down on this loophole, the EPA proposed denying SREs for 65+ pending applications. Third, perhaps as a concession to the biofuels industry for the retroactive cuts, the EPA's announcements were paired with an announcement on the same day of increased biofuels funding from the U.S. Department of Agriculture ("USDA") - \$700 million in pandemic relief aid for biofuels producers and \$100 million in funding for biofuels infrastructure.

"Despite multiple challenging dynamics affecting the RFS program in recent years, EPA remains committed to the growth of biofuels in America as a critical strategy to secure a clean, zero-carbon energy future. This package of actions will enable us to get the RFS program back in growth mode by setting ambitious levels for 2022, and by reinforcing the foundation of the program so that it's rooted in science and the law."

– EPA Administrator Michael  
Regan

Along with the EPA and USDA announcements, other signals from the Biden Administration over the past year have also been positive. In April 2021, the White House asked EPA to study how electric vehicles that utilize renewable fuels could be integrated into the RFS via an electric renewable identification number ("e-RIN") pathway. While electricity from biogas has long been eligible under the RFS, the EPA has never approved any applications primarily due to traceability concerns (i.e. how to track biogas from project site to a car's battery) and some applications have been pending for years awaiting EPA review. Identifying a formula for these types of scenarios to generate e-RINs would further spur EV growth, and the White House requested study is a push in the right direction. Building off of this, Representative Garamendi (D-CA) introduced the *Biomass and Biogas for Electric Vehicles Act* in the House on November 5, 2021 to create a path forward for the EPA to review the pending e-RIN applications. Lastly, the recently passed *Bipartisan Infrastructure Law* has \$7.5 billion set aside for EV charging buildout along with significant funding for other transportation related infrastructure and initiatives.

How some of these policies and programs will play out remains to be seen, but one thing is clear – transportation decarbonization will be a high priority item under the Biden administration and much more activity is expected in the coming months/years. Ensuring federal policies are harmonized with state approaches will be key to effective implementation.

## 4. SOL'S LCFS MANAGEMENT & MONETIZATION SERVICES

Sol Systems provides 100 percent turnkey LCFS management and monetization services to make LCFS market participation as simple and streamlined as possible. Our team provides hands-on, dedicated customer support, a client dashboard for real-time status updates, and transparent & low fees all while offloading the following administrative responsibilities from our clients:

- ✓ Fuel pathway certifications
- ✓ Fuel equipment registrations
- ✓ Reporting
- ✓ Compliance filings
- ✓ Invoicing & payments
- ✓ Carbon intensity ("CI") score optimization / book-and-claim services
- ✓ Marketing to buyers
- ✓ Inventory management

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*Sol Systems LCFS management & monetization services help save our clients hundreds of hours and thousands of dollars in cost each year.*

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**Contact Sol Systems to Learn More**

***lcfs@solsystems.com***

### Book-and-Claim Services

LCFS and clean fuels programs reward market participants for lower CI scores – the lower the CI of a fuel type, the more LCFS credits will be generated, thereby boosting revenue. While there are a few ways to lower CI scores, one of the faster routes is to purchase and retire renewable energy credits via a process called book-and-claim. Doing so can boost LCFS generation and revenue by 20-40 percent (depending on the client type).

**Sol Systems has come across many LCFS market participants that are leaving valuable revenue on the table by not utilizing book-and-claim.**

Sol Systems can help clients take advantage of book-and-claim and will manage all of the nuanced requirements associated with the process.



## Monetization Options

Sol Systems has pioneered several monetization options for environmental commodities. Whether clients are looking for short-term spot solutions or long-term hedged products, **Sol Systems can help.**

### Sol Brokerage

A spot solution that allows clients to take advantage of current market rates.

### Sol Annuity

A fixed-price, fixed-term strip that reduces market risk. Clients receive a steady stream of payments regardless of fluctuations or volatility in the market.

### Sol Upfront

An upfront, lump-sum payment that helps offset initial capital investment costs and eliminates regulatory risk.

### Sol Profit Share

A hybrid product that allows clients to lock in a fixed-floor price for a set period, mitigating market risk, while receiving an agreed-upon percentage of upside above a **strike price**. As an added bonus, Sol Systems donates 5 percent of its share to nonprofits working to support renewable energy and sustainability.

## Linking LCFS to Impact

Sol Systems has always been a mission-oriented company and we strive to work with our clients so their renewable energy investments have broader community and social impact. In the LCFS market in California, CARB requires that credit proceeds be used to further EV adoption in the state. While there is flexibility in how credit generators comply with this requirement, Sol Systems enjoys working with clients to identify and execute on unique ideas that achieve both transportation decarbonization goals as well as other corporate social responsibility commitments. Examples of programs that Sol can work with clients on include deployment of EV chargers in low-income communities, establishment of EV ride share programs, EV fleet deployment for schools, EV workforce development programs, and more.



## CONTACT US

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