



A Glimpse of the Near Future: Petroleum Product Landscape 2021-2023

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Fueling the future of transportation energy with trusted industry experience

1. Stillwater Associates leverage decades of experience to help clients navigate transportation fuels market challenges. **We see things others miss.**
2. Our clients: petroleum and renewable fuels companies, trade associations, government agencies, technology developers, private equity firms, and law firms.
3. Leading experts on the market and regulatory conditions impacting the transportation fuels industry including the federal Renewable Fuels Standard and California's LCFS.
4. Stillwater's **LCFS Newsletter** offers producers, importers, traders, and investors the right information to make smart credit market decisions.
5. Stillwater's **West Coast Watch** information portal provides data and analysis on transportation fuels supply and demand fundamentals on the West Coast.
6. **Questions?** Our team of experts is available to provide specific analysis and tailored strategy for your needs.

What will the near future look like?



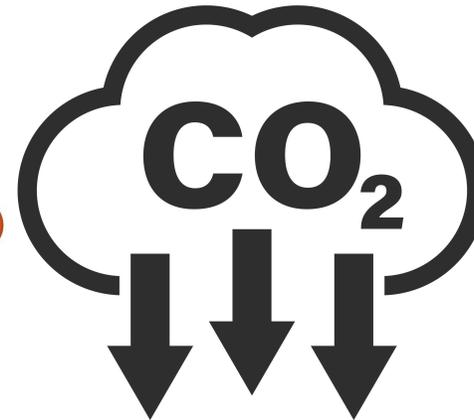
COVID-19
variant
outbreaks will
linger



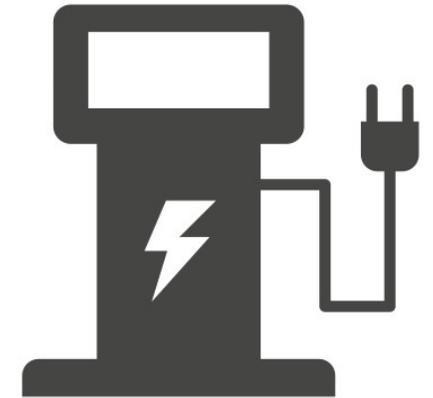
Work from
home will
continue



Infrastructure
improvements
will begin due to
congressional
action



More states will
adopt
regulations to
decarbonize the
transport sector



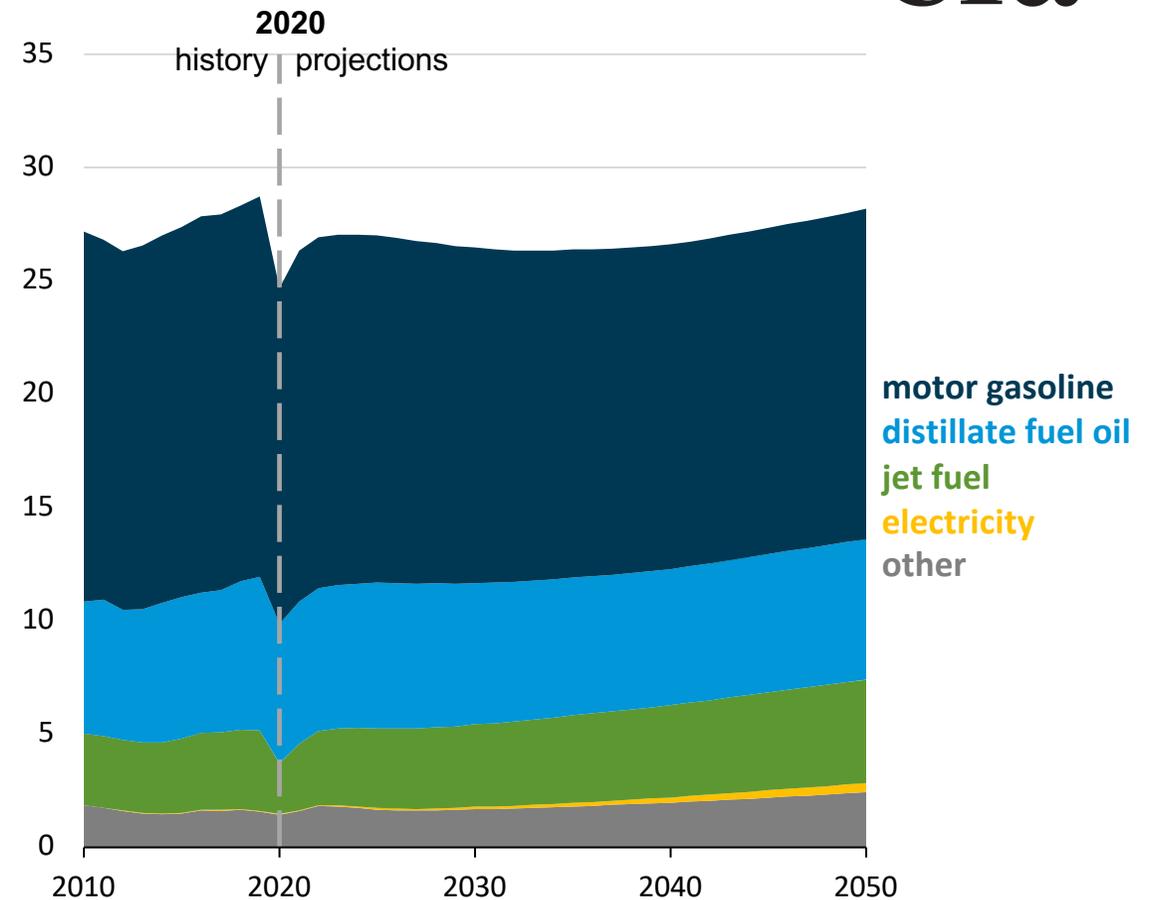
Electrification
will increase –
but it won't be
ubiquitous

Agenda

1. What is the outlook for petroleum product demand?
2. How will the RFS continue to impact the market?
3. The LCFS is coming.

What is the outlook for petroleum product demand?

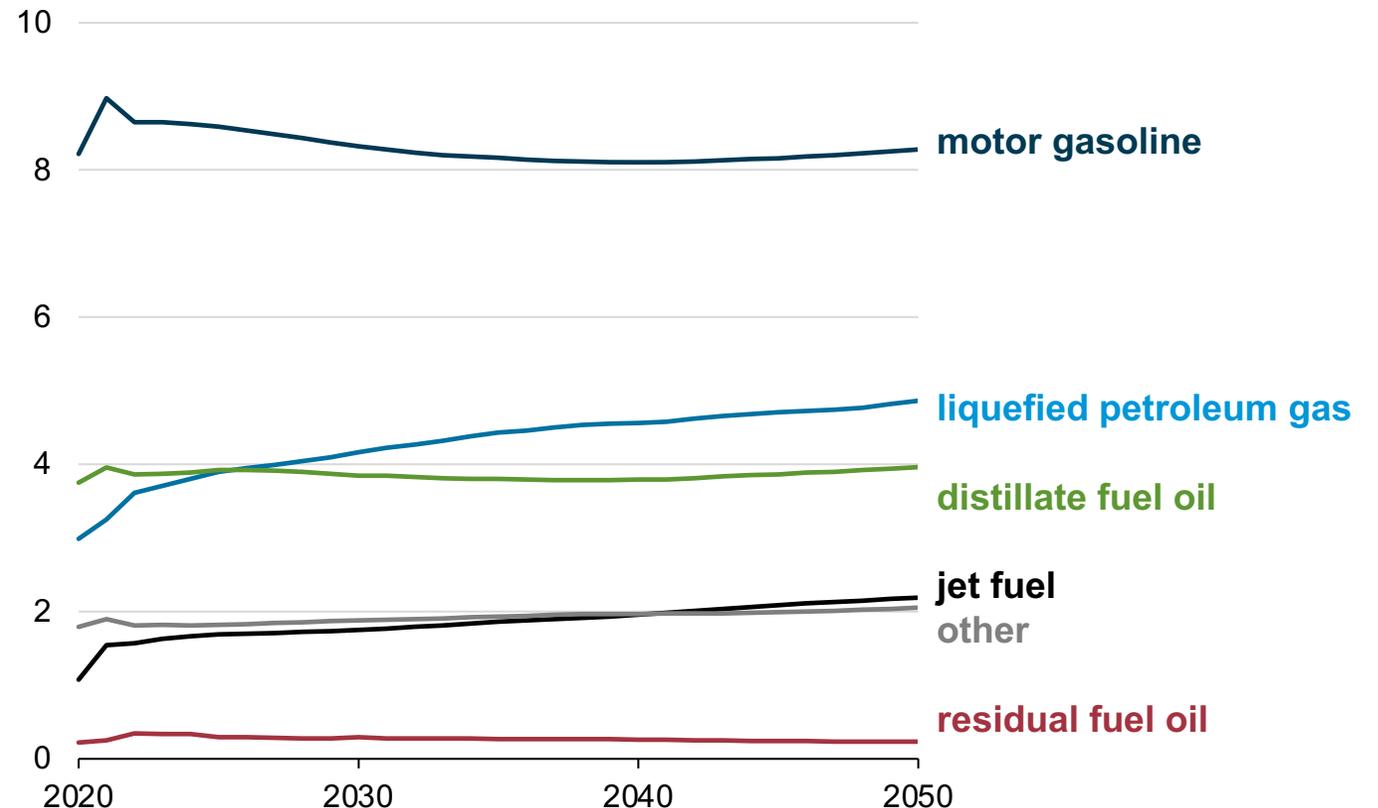
Transportation sector consumption by fuel
AEO2021 Reference Case
million barrels per day



EIA predicts gasoline demand will not return to pre-pandemic levels

1. The 2021 AEO presents an outlook through 2050 for energy consumption and production using 2019 as the baseline.
2. The AEO predicts travel demands will increase, but energy consumption will decrease due to energy efficiency improvements, increasingly stringent federal CAFÉ standards, and adoption of EVs.
3. The forecast shows gasoline consumption peaking in 2022, just below 2019 levels, and trending downward through 2050.
4. As demand for petroleum fuels diminish, the AEO shows biofuel use gradually increasing to about 10% of gasoline and diesel consumption on an energy basis.

Petroleum and other liquids consumption by fuel type
AEO2021 Reference case
million barrels per day



Looking past 2023: ZEV Sales Mandates and Goals

- 1. California's Advanced Clean Truck Regulation (ACT)**
Starting in 2024, mandates up to 75% of new medium- and heavy-duty vehicle sales (MHDV) be zero-emission vehicles (ZEVs) by 2035.
- 2. Governor Newsom's EO - ZEV Sales Mandate**
All new sales of passenger cars and trucks to be ZEVs by 2035.
- 3. President Biden's EO - ZEV Sales Goal**
50% of all vehicles sold in the U.S. to be electric by 2030.

Sources:

<https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks>

<https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-drastically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/>

<https://www.nytimes.com/2021/08/06/briefing/electric-vehicles-president-biden-climate.html>

How is the RFS impacting the market?



Source: OPIS

Refiners are facing a big RIN liability

**RINs prices
are high for a
few reasons**

1. Increased RIN market volatility due to the recent Supreme Court decision on Small Refinery Exemptions (SREs) and lack of guidance from the EPA.
2. D6 (corn ethanol) and D4 (biodiesel) RIN prices usually track together with D4 RINs leading in price.
3. D4 RIN prices are high because biodiesel (BD) production increased after the reinstatement of the \$1 per gallon Biomass-Based Diesel Tax Credit (BTC) and the price of soybean oil (SBO) has risen steeply due to strong export demand and global restocking as COVID abates.
4. Pandemic-related gasoline and diesel demand destruction has also contributed to high RIN prices. While RIN obligations automatically scale down with reduced sales, the fact that gasoline demand dropped more than diesel demand distorted RINs markets.

What are SREs?

1. Small refineries eligible to apply for exemptions have 75 thousand barrels per day (kbd) or less of crude runs in a compliance year.
2. All obligated parties must meet their RVO for the compliance year.
3. After the RVO is met, companies that own small refineries can apply for an exemption for those refineries. If EPA grants the exemption, the RINs for the exempted compliance year are returned to the company.

What's happening with SREs?

1. On June 25, 2021, SCOTUS ruled that small refineries can receive exemptions to the RFS even if their earlier exemptions lapsed.
2. According to Reuters, U.S. merchant refiners like PBF, CVR, Par, and Delta have amassed a RINs shortfall worth up to \$1.6 billion.
3. Owners of small refineries who are eligible to apply for SREs (like CVR and Par) are likely to apply for an exemption to cover that shortfall.

Sources:

<https://www.dtnpf.com/agriculture/web/ag/news/business-inputs/article/2021/06/25/supreme-court-small-refineries-can>
<https://www.reuters.com/business/energy/us-refiners-amass-over-1-blb-biofuel-liability-biden-admin-mulls-relief-2021-06-17/>

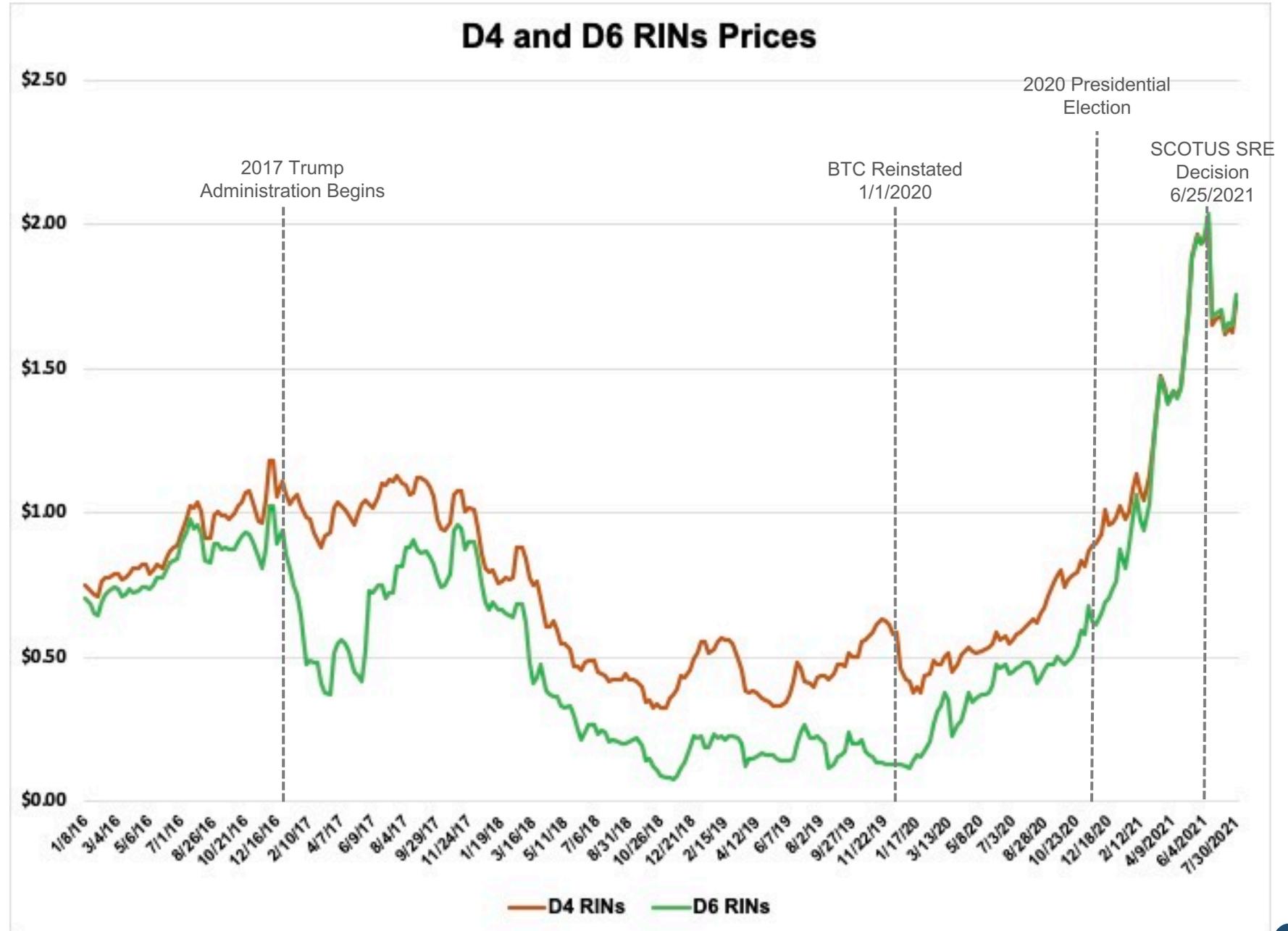
Status of the RFS



1. EPA has missed deadlines for announcing 2021 volume mandates.
2. 2021 and 2022 volume mandates are supposed to be finalized by December 2021.
3. EPA has statutory authority to determine volume obligations after 2022.
4. The agency is expected to propose how it will determine annual volume obligations post-2022 by this December.

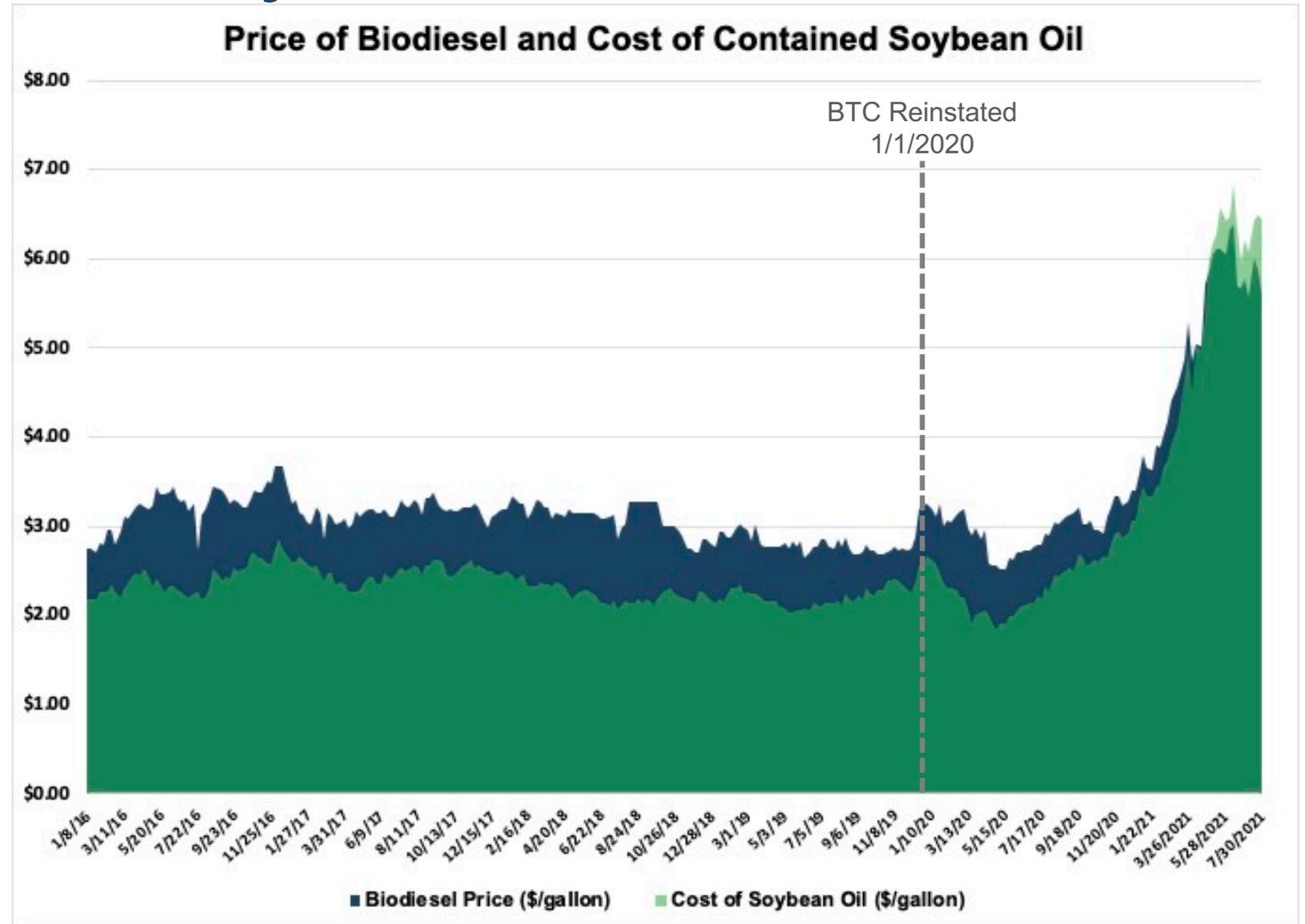
As the RINs Spin

1. D6 (corn ethanol) and D4 (biodiesel) RINs are the fundamental drivers of RIN prices.
2. D4 and D6 RIN prices usually track closely together because refiners use D4 RINs for marginal compliance.
3. RIN prices are highly influenced by market and political changes.



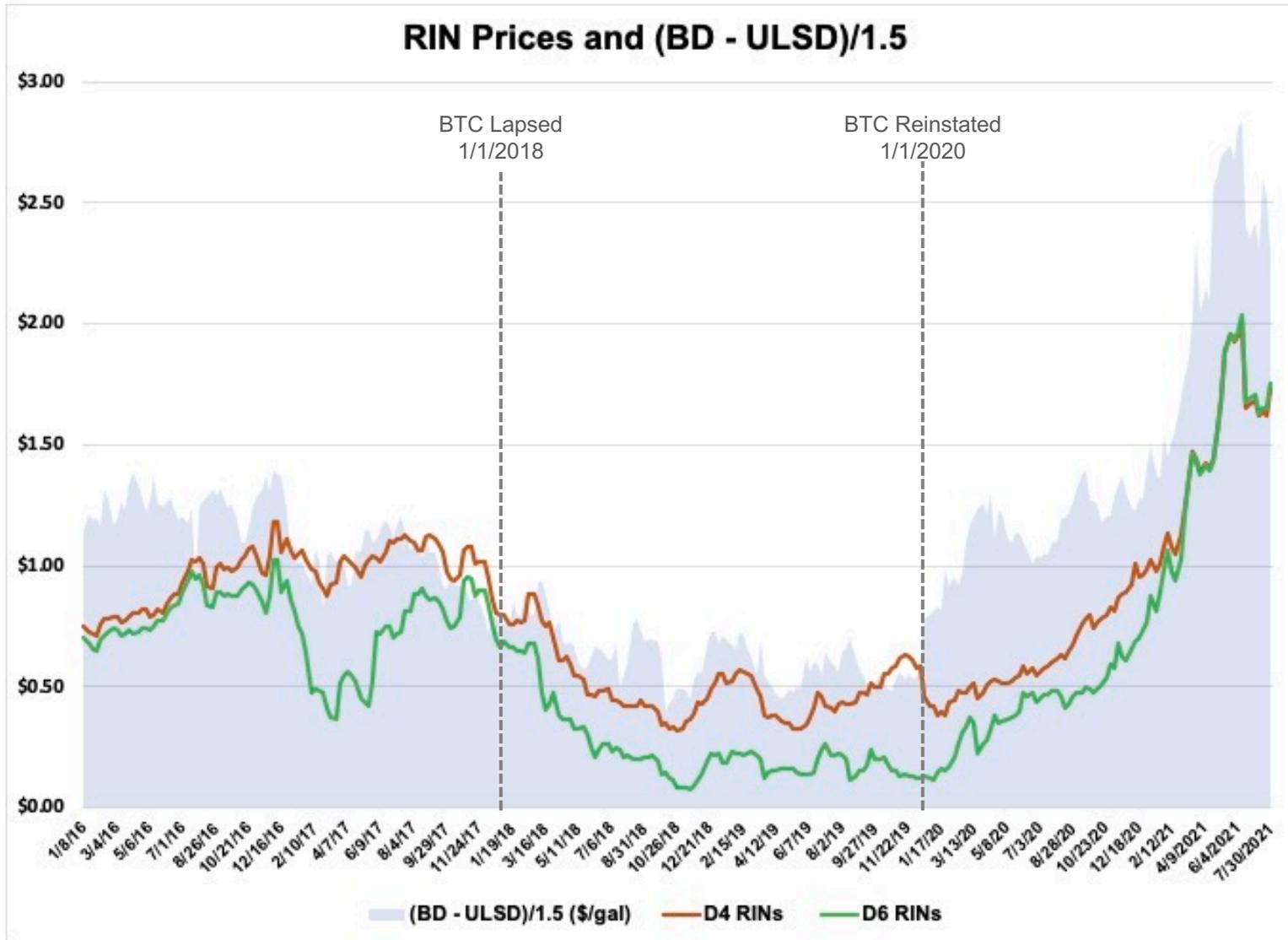
Biodiesel price has skyrocketed

1. SBO price is the primary driver of BD price.
2. SBO and BD price jumped beginning in 2020 due to expected increased sales because of the reinstated \$1 per gallon BTC.
3. Prices fell during the initial pandemic lock-downs.
4. Since the summer of 2020, SBO prices have risen faster than BD prices.
5. SBO price exceeded BD price in early April and has continued this trend through the summer.



Source: Center for Agricultural and Rural Development (CARD), Stillwater Analysis

D4 RINs track with the BD/Ultra Low Sulfur Diesel (ULSD) spread*



Source: CARD, OPIS, Stillwater Analysis

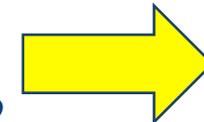
1. The (BD-ULSD)/1.5 spread was low from January 2018-December 2019, the period when the BTC lapsed.
2. The spread rebounded with the retroactive reinstatement of the BTC in January 2020.
3. Both BD and ULSD prices have rebounded since the early COVID-19 shutdowns, but BD prices have risen more rapidly, widening the spread.

*The division by 1.5 adjusts for the fact that each gallon of BD earns 1.5 RINs

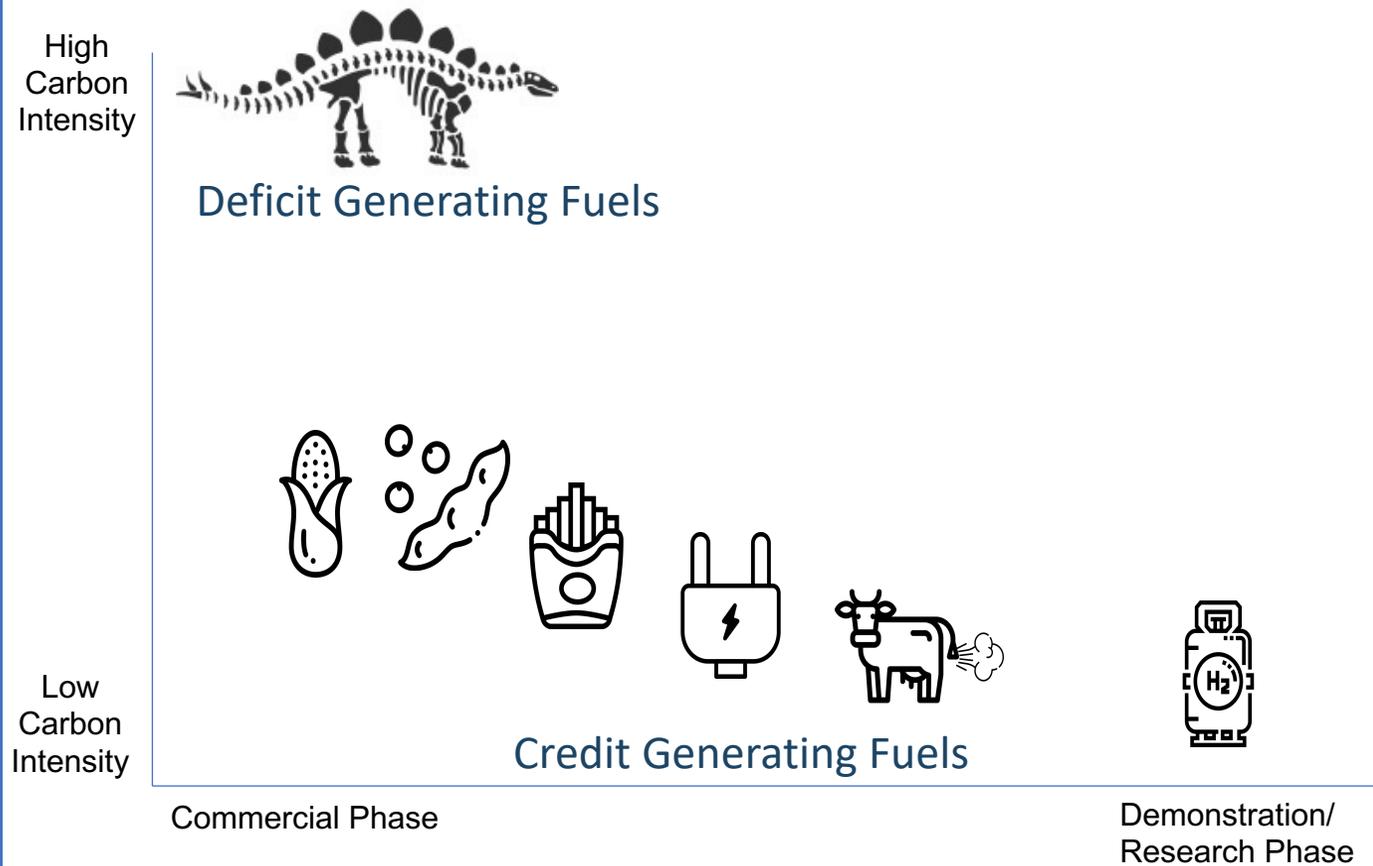
What is the outlook for the RFS and the RINs Market?

There's a lot of uncertainty on what EPA will do

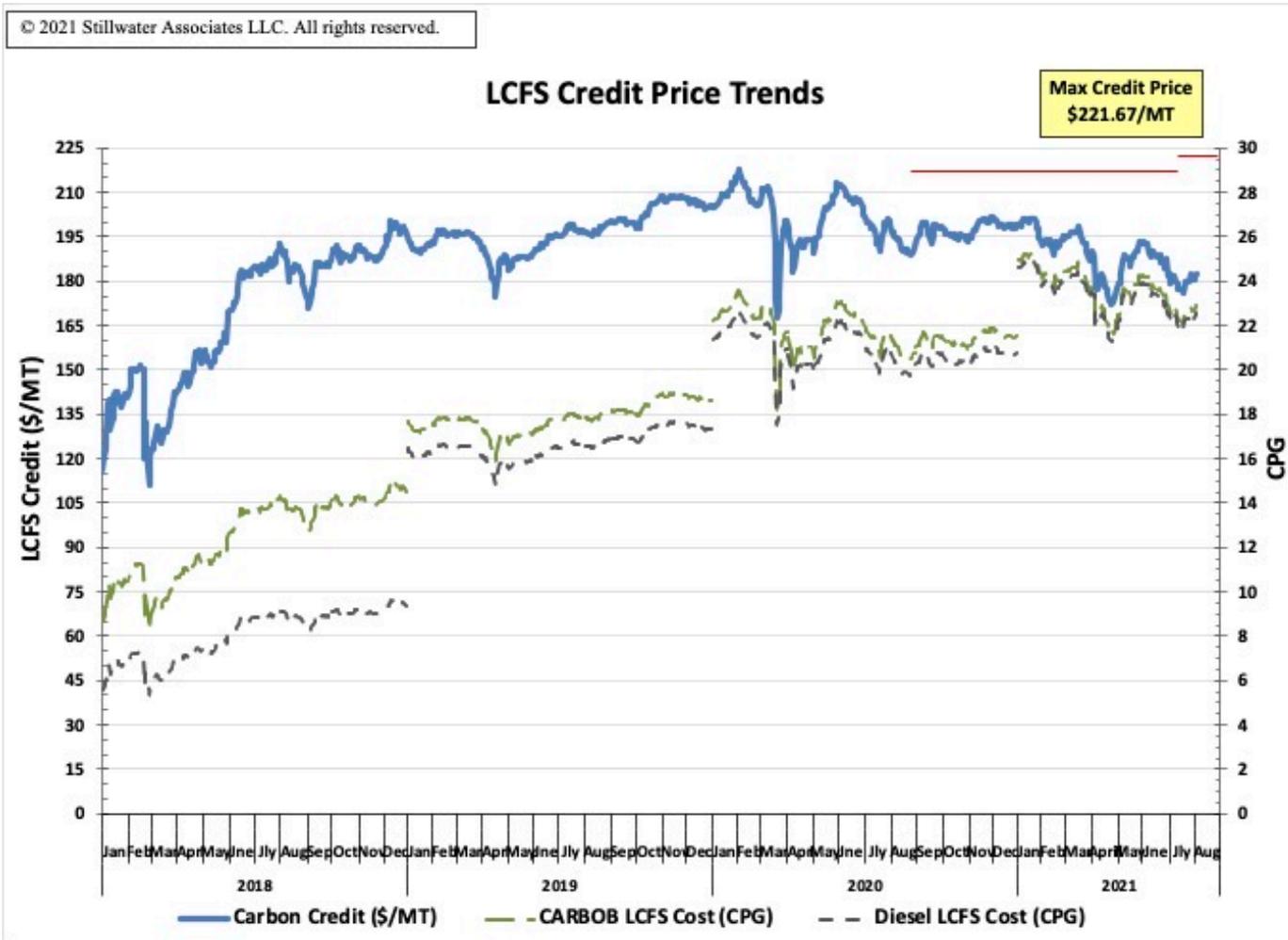
1. If EPA leaves the 2021 renewable volume obligations (RVO) steady, as they did in 2020, there is concern in the refining industry that the RIN bank will run dry, and that prices will increase even further.
2. In the meantime, refiners are investing in renewable diesel (RD) production in part to off-set their RIN liability. That RD supply is aimed at the California market where it earns Low Carbon Fuel Standard (LCFS) credits in addition to RINs.



The LCFS is coming.

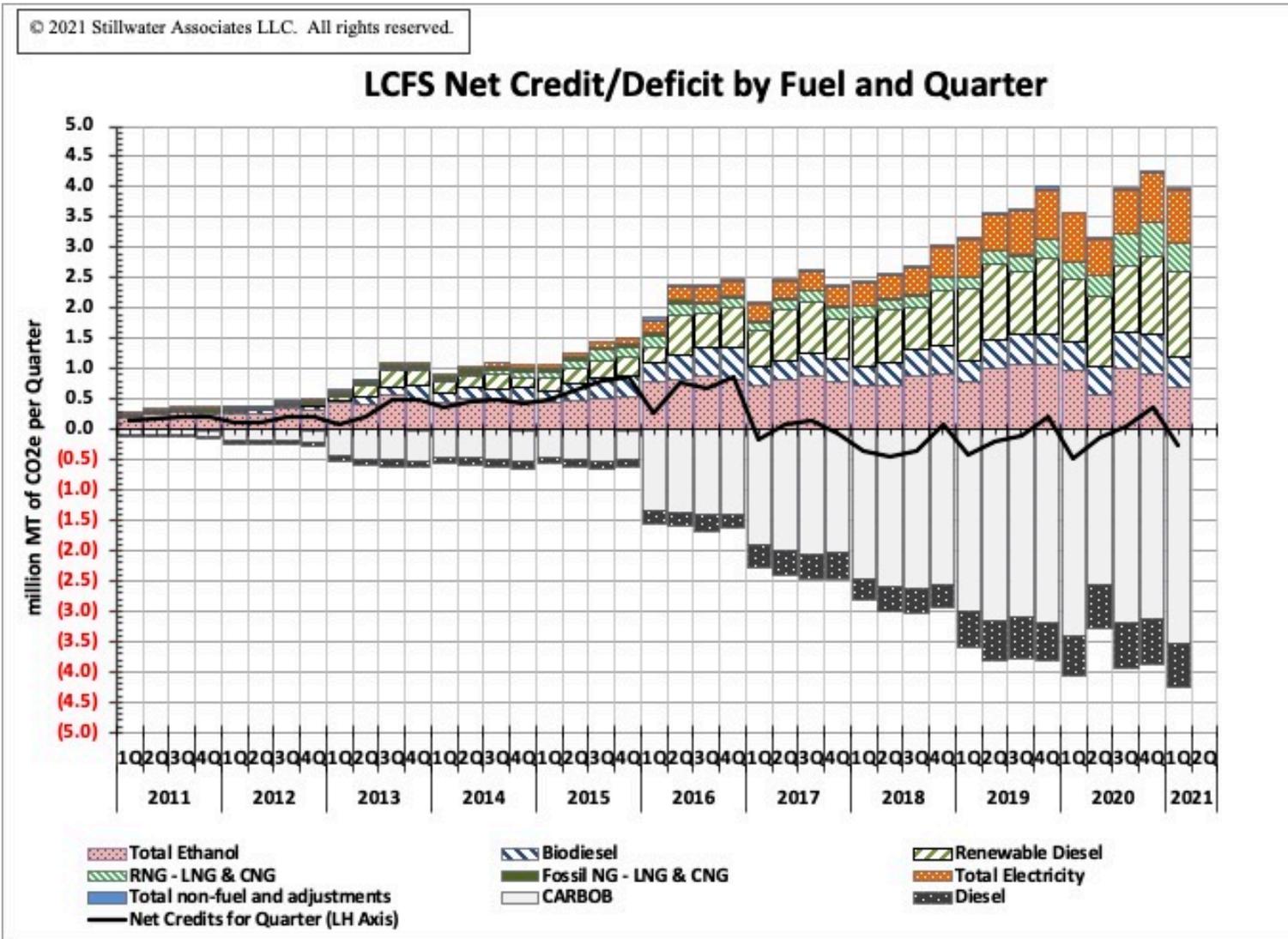


How has the LCFS changed the California market?



1. LCFS credit prices have averaged \$188/MT this year.
2. High credit prices drive investment in renewable fuels.
3. High credit prices drive competition to lower the carbon intensity (CI) of fuels to increase their value on the credit market.

Recent trends in California's LCFS

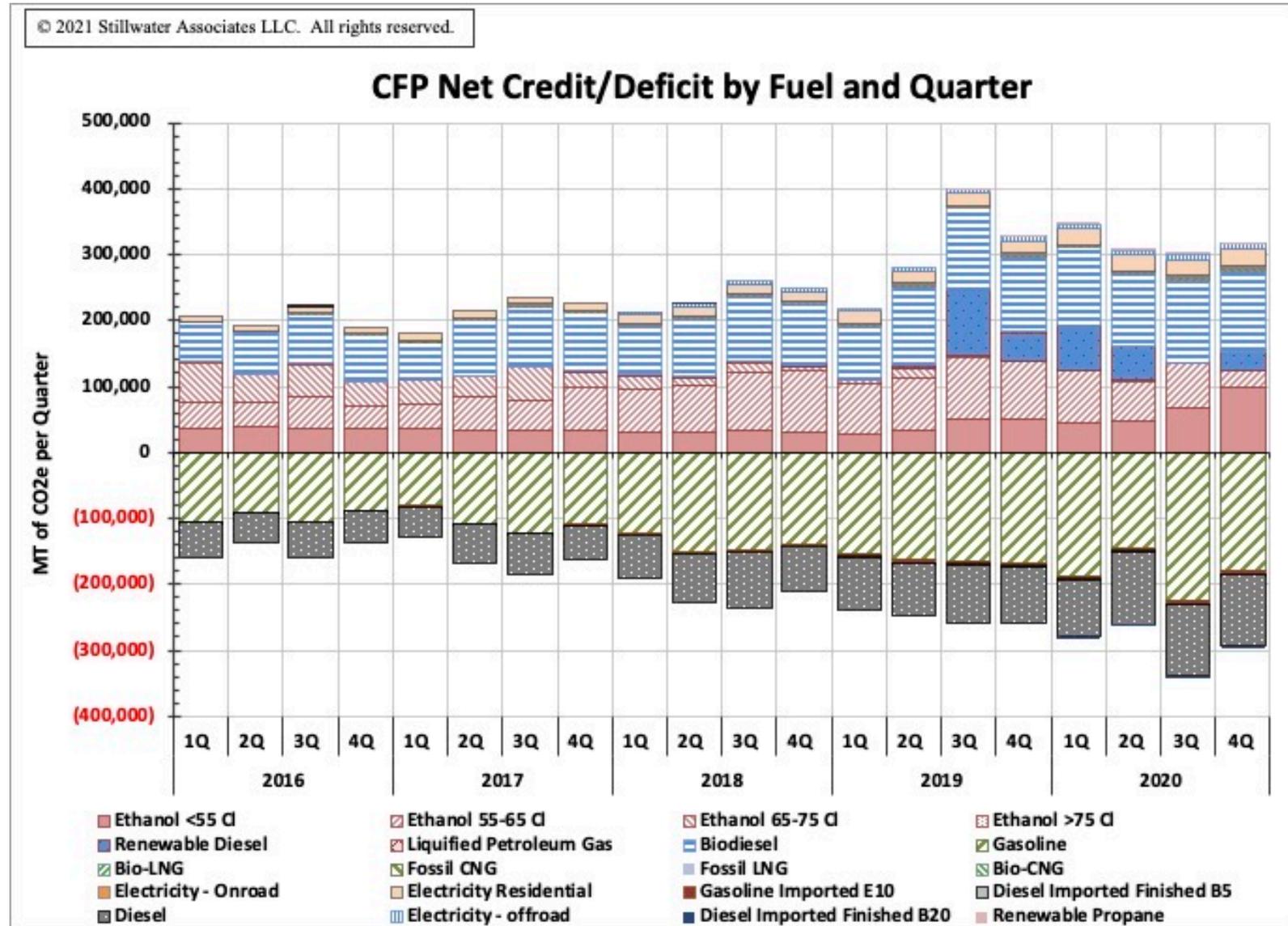


1. 1Q2021 RD volumes rose nearly 18% from the previous quarter and 49% from 1Q2020.
2. ULSD volumes dropped by 16% from 4Q2020.
3. Off-road electricity volumes rose 24% from 4Q2020.
4. Ethanol volumes dropped by nearly 13%, with CARBOB volumes down 2.9% from the previous quarter. CARBOB and ethanol usually track together to make the E10 requirement. This separation likely marks a draw down of ethanol inventory.
5. BD volume dropped 22% from 4Q2020.

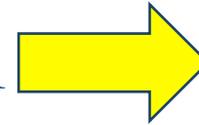
The diesel pool has been easier to decarbonize than the gasoline pool

Recent trends in Oregon's CFP

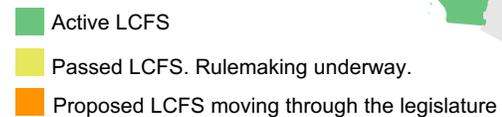
1. Based on the latest data (4Q2020), net credits increased to 24,000 MT from a deficit of 37,000 MT for 3Q2020.
2. Total contribution of alternative and renewable fuels increased from 7.9% in 3Q2020 to 9.2% of the fuel pool in 4Q2020.
3. The increase can be attributed to the blending of about 87,000 barrels of RD in 4Q2020.
4. BD blending continued to grow from quarter to quarter.
5. Electricity, LPG, CNG, and LNG have also seen small but steady growth.



The LCFS has led to an RD investment boom



What is the status for LCFS-style programs under development?



LCFS programs under development: Canada and Washington State

1. Canada

- a. The Canadian Clean Fuels Standard (CFS) requires the reduction of GHG emissions from gasoline, diesel, and home heating oil by 13% below 2016 levels by 2030.
- b. Currently in the comment and consultation phase, the final regulation is scheduled to be published in late 2021. The regulatory requirement will begin in December 2022.
- c. Deficit generating parties under the CFS, or “primary suppliers,” are liquid petroleum fuel producers and importers.

2. Washington State

- a. HB 1091, Washington’s CFS, passed in April and was signed by Governor Inslee on May 17th. The CFS requires the reduction of fuel CI to 10% and 20% below 2017 levels in 2031 and 2038, respectively. The Washington Department of Ecology will draft and finalize regulations for the CFS. The regulatory period will begin in 2023.

Proposed LCFS programs moving through state legislatures

- 1. Minnesota:** The Minnesota House and Senate introduced companion bills in March 2021, HF 2083 and SF 2027 – the “Future Fuels Act”. The Future Fuels Act would establish an LCFS to reduce transportation greenhouse gas emissions by 20% by 2035. Both bills remain in committee.
- 2. New Mexico:** SB 11, introduced in January 2021, would establish a CFS to reduce average greenhouse gas emissions by a minimum of 10% below 2018 levels by 2030 and 20% below 2018 levels by 2040. The bill passed the senate but died in the house. Stillwater expects this bill to return in the next congressional session.
- 3. New York:** AB 862, introduced in March 2021, would establish a CFS to reduce carbon emissions from on-road transportation by 20% by 2030, with further reductions to be implemented based upon advances in technology. Currently still in committee.

Conclusion

The transportation energy transition is just starting

1. Gasoline demand will rebound, but not to pre-pandemic levels.
2. State and federal mandates and incentives to reduce greenhouse gas emissions from the transport sector will continue to be enacted.
3. Major oil corporations are working to reduce the carbon intensity of their products.
4. OEMs are working to electrify their products.
5. We won't be able to electrify everything just yet.
6. Marketers who invest in the transportation energy transition will have an advantage.



Stillwater Associates
...experience runs deep

Thank you.
Questions?