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Sample LCFS Credit Price Outlook 4Q2021 Edition

PREPARED FOR

BY
STILLWATER ASSOCIATES LLC

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EXECUTIVE SUMMARY

In this report, Stillwater offers a forward-looking view of California Low Carbon Fuel Standard (LCFS) credit balances and prices through 2035.

In Section One, we offer an overview of the LCFS program. California's LCFS program and similar clean fuels programs aim to reduce emissions of greenhouse gasses (GHGs) by reducing the average carbon intensity (CI) of transportation fuels that are used in a particular jurisdiction. Overall program compliance is generally achieved through the substitution of alternative, low-CI fuels for conventional gasoline and diesel fuels. Within the program, entities that supply low-CI fuels generate credits that are then purchased by entities who generate deficits by producing or supplying high-CI fuels. The LCFS establishes annual CI benchmarks (the regulatory target CIs) that decrease each year through 2030. The difference between a particular fuel's CI and the benchmark CI establishes the number of credits or deficits the fuel will generate. Under the LCFS, each fuel is assigned a CI which accounts for feedstock, manufacturing, transport, and use of the fuel. The current CI reduction schedule steps down linearly from a 7.5% reduction in 2020 to a 20% reduction by 2030. The standard is currently set to continue at a 20% reduction from the 2010 baseline beyond 2030, but the California Air Resources Board (CARB) has begun the process to update and extend the schedule to greater reductions beyond 2030 and, potentially, prior to 2030 as well.

The supply and demand of LCFS credits affect the price of those credits, but those are not the only forces at play. In order to understand the likely forward trajectory of LCFS credit prices, it is important to understand the levers that influenced LCFS credit prices in the first decade of the program. As such, in Section Two of this report we cover how political, legal, regulatory, and market forces have affected LCFS credit prices since the program's inception and how we expect this landscape to shift over the next ten years.

In Section Three, we describe our approach to analyzing LCFS credit and deficit balances and credit prices. Stillwater's outlook for LCFS credit prices is based on:

1. Our deep historic knowledge of the LCFS program;
2. Our analysis of the demand for fossil gasoline and diesel;
3. The supply of low-CI fuels in California; and
4. Our outlook on the CI of each fuel pool.

For the purposes of this outlook, we assume no additional state-level LCFS type programs are added in this timeframe beyond the current programs in California and Oregon.¹ Our price assessment is clearer in the short-term and is very dependent on CARB's actions for the long term.

In Sections Four and Five, we offer fuel-by-fuel supply, demand, and CI outlooks for each of the deficit-generating (Section Four) and credit-generating (Section Five) fuels covered under the LCFS program. These form the basis for our credit balance outlook through 2035.

In Section Six we look at how the different fuel volumes combine to create an overall picture of the gasoline pool and the diesel pool. Examining each of these pools separately enables us to understand how the market is adjusting to the requirements for complying with the LCFS.

FOOTNOTES

1. Stillwater is not able to assess the potential impact of the recently enacted Washington State program until implementing regulations are proposed by the Washington Department of Ecology. Directionally, the program will increase demand for low-carbon fuels, thus supporting credit prices. This effect is anticipated to be small at the onset of the program, expected for the start of 2023, but may become more significant as 2035 approaches. Canada's federal Clean Fuel Standard is likely to have a larger impact than Washington state's program, but we are similarly unable to assess the total potential impact of Canada's program until the regulations are finalized and implemented. **As RD is currently a strong driver of the California LCFS program, to the extent that we could, we accounted for the implementation of the forthcoming Washington State and Canadian CFS programs in our RD analysis.**

Finally, in Section Seven we offer our LCFS credit bank and price outlooks through 2035. Stillwater’s “Base Case” represents our outlook for the annual average LCFS credit price during each year through 2035. This price curve is estimated based on analysis of key factors which have explained prior year price levels as well as emerging new trends. Stillwater also offers “Low Case” and “High Case” curves to bound the outlook. To illustrate the potential impact of increasing the stringency of the LCFS, we also include an “Accelerated CI Reduction Case.” This case is a variation on the Base Case in which we assume that the pace of annual CI reductions is increased to 1.5% per year starting in 2025 instead of the current 1.25% per year pace (which we extrapolate to 2035 in all our other cases).

*Note: Stillwater’s LCFS Credit Price Outlook projects the amount and environmental characteristics of each fuel that contributes to the supply or demand of LCFS credits. We estimate several key factors based on this outlook to determine the forecasted price. As with all forecasts, the input assumptions, including potential regulatory changes, commodity prices, and the economic environment may shift over time, resulting in deviations from the forecast. **For clients with specific concerns over the sensitivity of our outlook to specific variables, we can evaluate additional cases for an added fee.***