

March 15, 2023

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California Air Resources Board
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[submitted electronically]

RE: Comments On February 22, 2023, Workshop to Discuss Potential Changes to the Low Carbon Fuel Standard

Remora appreciates the opportunity to provide comments on the California Air Resources Board's (CARB) February 22, 2023, Workshop to Discuss Potential Changes to the Low Carbon Fuel Standard (LCFS). Remora is committed to working with CARB, its State agency partners, and all stakeholders to deliver innovative climate solutions that will provide benefits in California and beyond.

About Remora & Mobile Carbon Capture Technology

[Remora](#) designs and manufactures an **innovative engine exhaust technology that captures carbon dioxide (CO₂) directly from heavy, hard-to-decarbonize mobile sources**, including Class 8 heavy-duty vehicles (semi-trucks). Remora invented and designed mobile carbon capture and storage (MCCS) technology in the Detroit, Michigan, metropolitan area that can be directly attached to existing semi-trucks. Using Remora's technology, semi-truck exhaust is diverted to a mobile carbon capture unit, which captures approximately 80% of CO₂ emissions generated by the semi-truck (as well as approximately 75% of nitrous oxide emissions), before the exhaust is released into the atmosphere. The captured CO₂ is compressed, stored onboard, and then offloaded at designated sites that are co-located at refueling or cargo-loading infrastructure sites. All captured CO₂ can be safely and permanently disposed of via underground sequestration.

Semi-trucks are essential to our economy, delivering over 70% of goods that Americans use. Unfortunately, semi-trucks are also extremely high greenhouse gas (GHG) emitters and difficult to decarbonize. The approximately two million semi-trucks in operation today emit approximately 339 million metric tons of CO₂ per year. In addition, these high-emitting semi-trucks will be on the roads for decades to come, given the investments made by companies to purchase these vehicles and the need for these vehicles to support supply chain needs across the United States. Remora's MCCS technology has the power to decarbonize existing trucks and, if coupled with the use of biofuels, can result in semi-truck operations with a negative carbon intensity score.

Importantly, Remora's MCCS technology already works. To date, Remora has partnered with numerous nationally significant companies, including three in the Fortune 10 and numerous in the Fortune 500, to install its carbon capture equipment on their semi-trucks. Market demand for Remora's technology is extremely high as companies seek to reduce their CO₂ emissions. Remora's MCCS technology, and that developed by other MCCS companies, is uniquely poised to offer major decarbonization benefits while also supporting the growth of small businesses, helping to remedy environmental justice injustices and inequalities, advancing further innovations in CCS technology, and more, as described further below:

- Air Quality Benefits: Remora's MCCS technology acts as a filter on engine exhaust. Along with capturing CO₂, it demonstrates the potential to drastically improve air quality by reducing toxic air pollutants and other GHGs like nitrogen oxides by approximately 75%. These benefits could immediately serve low-income and disadvantaged communities that are most affected by vehicle emissions due to their proximity, in many cases, to highways and other major roadways.
- Scalable Impact: The decarbonizing impact of Remora's technology has the potential to rapidly scale. Each Remora MCCS unit is equivalent to removing approximately 30 passenger vehicles from the road per year. Remora's carbon capture units would capture and store 1,000,000 metric tons of CO₂ annually just by installing MCCS units on about 7,500 semi-trucks. With millions of semi-trucks in the United States, the opportunity for MCCS is enormous and increases further when utilized for other mobile sources of CO₂ emissions.
- Benefits for Small Businesses: While Remora currently partners with Fortune 500 fleet customers who can afford to test and invest in new technologies, in order to have an industry-wide impact, Remora's MCCS technology must be affordable to small,

family-owned fleets. Over 90% of fleets in the United States are under six trucks. Working with small, family-owned fleets will be essential to decarbonizing trucking.

- Industry-Wide Benefits: The development of Remora’s MCCC technology and others like it will benefit the carbon capture and management industry more broadly. Remora’s MCCC technology uses the same science as other CCS technology, meaning innovations that Remora advances benefit the general understanding of CCS technology. Remora has already advanced critical outcomes in the energy usage, size and weight, and cost of CCS technology.

Remora’s device and other mobile carbon capture technologies can *quickly* address the most difficult sectors to decarbonize, including heavy-duty trucking, vessel shipping, and rail. Remora’s technology is a critical near-term solution that can deliver significant climate benefits and support and complement efforts toward achieving zero-emission transportation in California. When paired with vehicles that run on synthetic or renewable fuels, Remora’s innovative technology can **make transportation carbon negative** (in what is known as a bioenergy with carbon capture and storage or “BECCS” carbon removal pathway).

February 22, 2023, LCFS Workshop Comments

Remora supports actions to decarbonize the transportation sector as soon as possible. California’s transportation sector is the State’s largest source of both GHG emissions and air pollution, accounting for more than half of statewide emissions.¹ Rapidly driving down these emissions is a critical element of California’s strategy to achieve carbon neutrality. As the Governor rightly recognized in his July 22, 2022, letter to CARB Chair Randolph on the 2022 Climate Change Scoping Plan Update, innovative carbon capture and sequestration technologies will be necessary for California to reach its climate goals, including carbon neutrality by 2045. Additionally, SB 905 (Caballero & Skinner), recently passed by the legislature and signed by Governor Newsom further underscores the role that carbon capture technologies will need to play as part of these efforts. Solutions that can significantly reduce—and even fully eliminate—greenhouse gas emissions from California’s transportation sector will be key.

Remora additionally supports CARB’s accelerated carbon intensity (CI) reduction targets and presented at the February 22, 2023, LCFS Workshop. LCFS CI targets can be made more ambitious by the inclusion of a suite of transportation decarbonization technologies. Remora can support California’s CI targets and efforts to decarbonize the transportation sector through

¹ See Draft 2022 Scoping Plan Update, pg. 147

its technology. Mobile carbon capture technologies that can be rapidly scaled to deliver significant climate, air quality, and public health benefits in California provide a critical tool that the State can take advantage of in meeting its goals.

Remora appreciates the opportunity to submit comments, and we look forward to continuing to work with you and all stakeholders in California on this critically important effort.

Sincerely,

A handwritten signature in cursive script that reads "Alexandra Frumar". The ink is dark and the signature is fluid.

Alexandra Frumar
Chief Legal Officer