November 7, 2022

VIA ELECTRONIC FILING

Cari Anderson
Branch Chief, Freight Transport Branch
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Neste Comments on Proposed In-Use Locomotive Regulation - September 20, 2022

Dear Ms. Anderson,

Neste appreciates the opportunity to provide these comments to the California Air Resources Board (CARB) on the proposed In-Use Locomotive Regulation posted September 20, 2022. Neste is the world's largest producer of renewable diesel (RD) and sustainable aviation fuel (SAF) refined from waste and residues. During the past ten years, Neste's transformation journey has taken it from a local oil refining and service company to a global leader in renewable and circular solutions. Neste's goal is to achieve carbon neutral production by 2035 and supply California with products that will enable the state to be carbon neutral by 2045. We are in the business of combating climate change by producing effective climate solutions, particularly for hard-to-decarbonize sectors including heavy-duty trucks and aviation, and our vision is to lead the way towards a sustainable future together.

Neste applauds CARB's ongoing commitment to respond to the challenges of climate change and air pollution through regulatory actions across multiple economic sectors, including transportation. CARB has used a range of regulatory approaches from performance standards, to incentives, to more prescriptive requirements. For example, the Low Carbon Fuel Standard (LCFS) – a first-of-its-kind approach developed by CARB – establishes a performance standard of carbon intensity that challenges fuel providers to develop a range of technologies that can reduce greenhouse gas (GHG) emissions. The proposed In-Use Locomotive regulation takes aim at emissions from locomotives with a focus on driving the adoption of specific zero-emission (ZE) technologies. Neste would like to request that CARB consider evaluating renewable diesel as a more immediate way of reaching the emissions reductions goals of this regulation. We strongly urge that CARB consider adding RD into the proposed regulation based on the enormous potential it has to reduce GHG, particulate matter and NOx emissions per CARB emissions testing[1]. RD is a technology that is available today and that can be used by the rail sector with minimal impact to current operations, and that will generate immediate air quality benefits to local communities.

Neste would like to offer the following comments to engage as a partner in a longer-term dialogue on regulatory actions aimed at the rail sector.

1. Renewable diesel use, driven by the LCFS, has been (and will continue to be) instrumental in reducing GHG, criteria, and toxic pollutant emissions from heavy duty trucks[2] and harbor crafts[3]. Unfortunately, there are currently no incentives for RD use in the rail sector, and this regulation could change that.
2. Recent research on heavy-duty (HD) trucks has demonstrated that the use of advanced clean diesel internal combustion engines (ICE) and RD can reduce three times more GHG emissions and reduce criteria pollutant emissions in affected communities faster than shifting to ZEs between 2022 and

[1] https://ww2.arb.ca.gov/sites/default/files/2021-11/Renewable_Diesel_Fuel_Effects_Locomotive_Exhaust_Emissions.pdf
[2] https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/finalea.pdf?_ga=2.234031006.1245821413.1666038004-1388421127.1643142970
[3] https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/chc2021/appe.pdf

2032. Neste believes that RD used in locomotives can achieve similar GHG reductions when compared to ZE's.

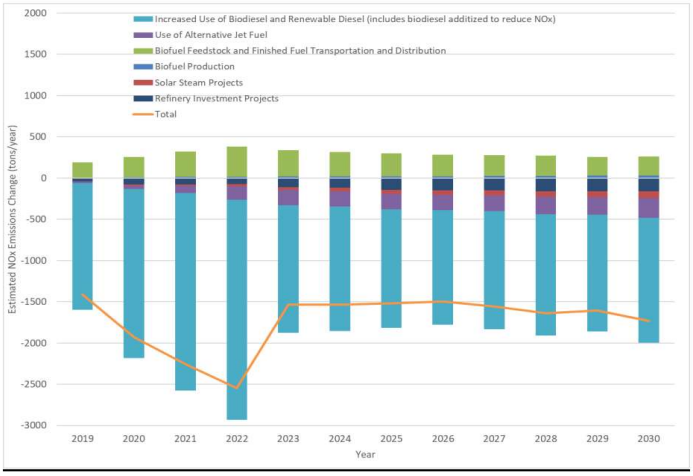
3. Adding the In-Use Locomotive regulation into the wide range of existing regulations addressing transportation emissions can create challenges in coordination, increased costs, and negative interactions between regulations.

The LCFS, Renewable Diesel, and Emissions Reductions from Transportation

Neste was one of the first major suppliers of renewable diesel into California when it implemented the nation's first LCFS. As an early participant in California's LCFS program, we have supplied California with most of the renewable diesel consumed in the state, thereby reducing the overall carbon footprint of the heavy duty vehicle sector. To date, the introduction of RD into the state's vehicle fleet has driven both GHG and criteria and toxic pollutant emission reductions as noted below.

- Over the course of the life cycle, renewable diesel leads to a 75% reduction in greenhouse gas (GHG) emissions when compared to fossil diesel.
- As a drop-in fuel requiring no additional investment in infrastructure, renewable diesel has been introduced seamlessly into HD vehicle usage and has delivered 28% of the GHG reductions from alternative fuels over the life of the LCFS.
- In addition, as part of the 2018 LCFS rulemaking, CARB projected (see Figures 4-1 and 4-2 below) renewable diesel (and biodiesel) to be the most significant source of NOx and PM reductions generated by the LCFS program.[4]
- New locomotive engine testing by Cummins[5] and Rolls Royce[6] saw a 50-80% PM reduction and 8-13% NOx reduction when operating with 100% RD, including Tier 4 engines.
- CARB RD testing on locomotives in June 2020 showed a 36% reduction in PM and 17% reduction in NOx when compared to conventional diesel.[7]

Figure 4-1: Estimated Statewide NOx Emissions Impact of the Proposed LCFS Amendments Relative to 2016 Baseline (tons/year)



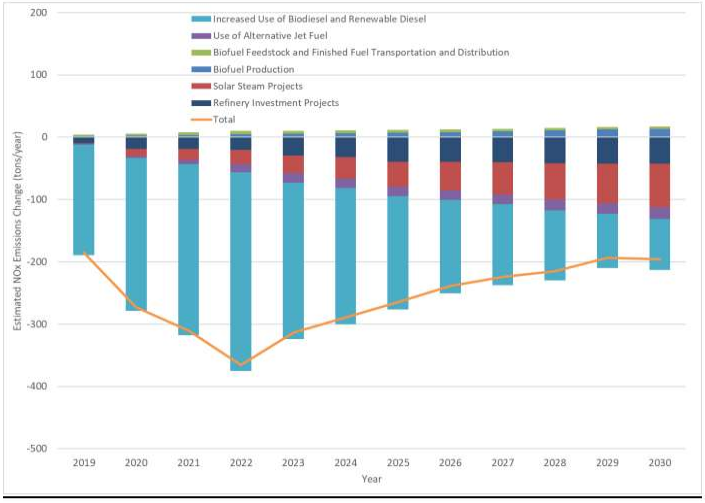
[4] https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2018/lcfs18/finalea.pdf?_ga=2.234031006.1245821413.1666038004-1388421127.1643142970

[5] https://www.cummins.com/news/releases/2022/09/20/cummins-qsk95-engine-proven-fully-compatible-renewable-diesel

[6] https://www.mtu-solutions.com/au/en/pressreleases/2022/rolls-royce-and-neste-to-cooperate-on-the-implementation-of-sust.html

[7] https://ww2.arb.ca.gov/sites/default/files/2021-11/Renewable_Diesel_Fuel_Effects_Locomotive_Exhaust_Emissions.pdf

Figure 4-2: Estimated Statewide $PM_{2.5}$ Emissions Impact of the Proposed LCFS Amendments Relative to 2016 Baseline (tons/year)



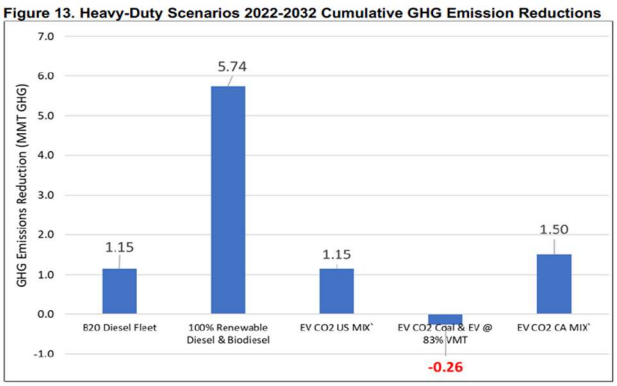
In summary, RD has been cleaning California's HD vehicle fleets successfully for over 10 years and with broader adoption is poised to deliver significantly more reductions in the future. Unfortunately, the rail sector has not achieved similar results via the use of RD because the rail sector is exempt from the LCFS regulation. This regulation could create those incentives and help the rail sector achieve similar emissions reductions as the HD vehicle fleets.

<u>Renewable Diesel Can Help Reduce Emissions from Locomotives Faster</u>

Research by the Intergovernmental Panel on Climate Change (IPCC) has consistently highlighted that GHG reductions achieved in the next 10 to 15 years are critical in reaching carbon neutrality by 2045. Increased deployment of zero-emission vehicles (ZEV) in the Medium and Heavy-duty (M&HD) vehicle fleet can contribute to those reductions on a timeline dependent upon several factors including: advances in battery technology, ramp up of M&HD vehicle production, electric charging/fueling infrastructure and renewable electricity generation. In a study of 10,000 HD vehicles in the Northeastern U.S. released in 2022, Stillwater Associates LLC compared the environmental benefits of phasing in new diesel ICE trucks fueled with renewable diesel vs. EV trucks from 2022 to 2032. As shown in the slide graphic below, the ICE/RD scenario delivers ***three times*** greater cumulative GHG emissions over the study period. Similarly, Neste believes that RD is capable of achieving larger GHG reductions than ZE locomotives.

Biofuels Outperform EV Cumulative GHG Reductions

Figure 13. Heavy-Duty Scenarios 2022-2032 Cumulative GHG Emission Reductions



- By 2032 100% Renewable Diesel provides 3 times more GHG reduction than EV(US Mix)
- By 2032 B20 provides the same GHG reduction as EV (US Mix) migration

Locomotives are similar to HD vehicles where ZE technology is more difficult and more expensive to deploy, and RD can provide a seamless pathway to immediate reductions in GHG, criteria, and toxic pollutant emissions. Neste supports fuel and technology-neutral regulatory policies that recognize the essential contributions of a range of transportation technologies to building a more sustainable future. RD and future advanced liquid low carbon fuels can accelerate locomotive emission reductions in the near term and consistently contribute to reductions in this sector for the long term.

Challenges of Coordinating Multiple Transportation Sector Policies

In a 2018 report,[8] the California Legislative Analyst's Office (LAO) highlighted a number of challenges with implementing the state's wide range of regulatory programs addressing emissions from the transportation sector including difficulty in coordinating multiple policies, higher administrative costs, and potential interactions among policies that could limit their effectiveness.

The Initial Statement of Reasons (ISOR) supporting the draft proposal states that the direct costs of implementing the In-Use Locomotive Regulation will be offset by a number of benefits, one of which is LCFS revenue. It appears that this revenue is associated with LCFS credits generated through an approved pathway carbon intensity for ZE locomotive Energy Economy Ratios (EER). Recent decreases in the LCFS credit prices driven by significant increases in credit generation highlight a potential issue with the interaction of the In-Use Locomotive Regulation and LCFS. To the extent that opportunities for credit generation continue to be increased (e.g., for the installation of ZEV fueling/charging infrastructure that may or may not be fueling/charging vehicles) this puts downward pressure on credit prices and, therefore, on the potential for LCFS revenue to offset In-Use Locomotive Regulation implementation costs.

Neste looks forward to participating further with CARB as it develops the In-Use Locomotive Regulation, updates the LCFS and advances other aspects of its transportation sector regulations. We stand ready to support the Agency's efforts to reduce the impacts of climate change and air pollution across the state and particularly in disadvantaged communities.

Please feel free to contact me if you have any questions regarding this submission.

Sincerely,

Oscar Garcia

West Coast Regulatory Affairs Manager
Neste US, Inc.

[8] https://lao.ca.gov/Publications/report/3912#Key_Takeaways_From_Review_of_Major_Policies