Before the
ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C. 20460

In the Matter of	)	
	)	
California State Nonroad Engine	)	Docket No. FRL-11737-01-OAR
Pollution Control Standards; In-Use	)	
Locomotive Regulation; Requests for	)	89 Fed. Reg. 14,484
Authorization	)	
	)	

COMMENTS OF REASON FOUNDATION

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Introduction

On behalf of Reason Foundation, I respectfully submit these comments in response to the Environmental Protection Agency's ("EPA") notice of opportunity for public hearing and comment on the California Air Resource Board's ("CARB") request for a Section 209(e) authorization of its In-Use Locomotive Regulation.[1]

By way of background, I am a senior transportation policy analyst at Reason Foundation and focus on matters related to transportation technology.[2] I have testified before Congress on the interactions between freight rail technology and public policy.[3]

Reason Foundation is a national 501(c)(3) public policy research and education organization with expertise across a range of policy areas, including transportation.[4] It is headquartered in Los Angeles, California.

This comment letter develops the following points:

1. CARB's rule mandates unproven technology;
2. CARB's rule would impose large costs;
3. CARB's rule would reduce freight rail's ability to compete with trucks; and
4. A modal shift from rail to truck would increase transportation sector emissions.

1. CARB's Rule Mandates Unproven Technology

Under CARB's In-Use Locomotive Regulation, freight railroads operating in California would be required by 2030 to adopt zero-emission locomotives for switching and

1. California State Nonroad Engine Pollution Control Standards; In-Use Locomotive Regulation; Requests for Authorization, *Notice of Opportunity for Public Hearing and Comment*, Docket No. FRL-11737-01-OAR, 89 Fed. Reg. 14,484 (Feb. 27, 2024).
2. *See* Marc Scribner, "Pathways and Policy for 21st Century Freight Rail," *Reason Foundation Policy Brief* (Sept. 2021), *available at* https://reason.org/wp-content/uploads/pathways-and-policy-for-21st-century-freight-rail.pdf.
3. Testimony of Marc Scribner before the Subcommittee on Railroads, Pipelines, and Hazardous Materials of the Committee on Transportation and Infrastructure, U.S. House of Representatives (May 11, 2023), *available at* https://reason.org/wp-content/uploads/scribner-testimony-house-rail-supply-chain-challenges.pdf.
4. *See* About Reason Foundation, https://reason.org/about-reason-foundation/ (last visited April 9, 2024).

industrial use and by 2035 for line-haul use.[5] The problem is no zero-emission freight locomotives have been shown to be commercially viable.

Currently, Progress Rail's EMD SD40JR Joule battery-electric locomotive designed for switching and industrial use is undergoing a year-long test on the Pacific Harbor Line at the Ports of Los Angeles and Long Beach,[6] with similar testing underway in Brazil.[7] For line-haul operations, Wabtec's FLXdrive battery-electric locomotive is scheduled to begin testing sometime in 2025 in Western Australia.[8]

Whether these novel zero-emission locomotive technologies will prove to be sufficiently reliable and cost-effective to support future commercial operations is unknown. What is known is these technologies are not nearly mature enough to assume they will be commercially viable in time to meet CARB's aggressive regulatory timeline. This has understandably led engineering expert Bill Schweber to ask about CARB's In-Use Locomotive Regulation, "Is there a way to achieve it at an acceptable cost, disruption and time frame? And the ultimate question: Is the [zero-emission] gain here worth the many pain points?"[9]

2. CARB's Rule Would Impose Large Costs

In addition to the large costs associated with CARB's mandate of unproven technology, the In-Use Locomotive Regulation would require early retirement of existing locomotives that do not meet Tier 4 standards.[10] CARB also requires locomotive operators in California to establish and pay into a Spending Account, a restricted trust from which funds can only be expended for regulatory compliance purposes.[11]

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5. California Air Resources Board, "Clean Air Act § 209(e)(2) Authorization Support Document," In the Matter of California's Request for Authorization Pursuant to Clean Air Act Section 209(e) for the In-Use Locomotive Regulation (Nov. 7, 2023) at 5–6, *available at* https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/authorizationsdoc.pdf [hereinafter CARB Support Document].
6. "Joule battery loco unveiled ahead of trial," *Railway Gazette International* (May 15, 2023), *available at* https://www.railwaygazette.com/traction-and-rolling-stock/joule-battery-loco-unveiled-ahead-of-trial/64113.article (last visited April 9, 2024).
7. Stolchnev Alexey and Litvintsova Olga, "Chinese and US manufacturers compete to supply battery locomotives to Brazil," *ROLLINGSTOCK Agency* (March 21, 2022), *available at* https://rollingstockworld.com/locomotives/chinese-and-us-manufacturers-compete-to-supply-battery-locomotives-to-brazil/ (last visited April 9, 2024).
8. "Rio Tinto plans to conduct trials of 4 FLXdrive locomotives," *Railway Supply* (Oct. 25, 2023), *available at* https://www.railway.supply/en/rio-tinto-plans-to-conduct-trials-of-4-flxdrive-locomotives/ (last visited April 9, 2024).
9. Bill Schweber, "Can Batteries Power Freight Locomotives?" *EE Times* (January 4, 2024), *available at* https://www.eetimes.com/can-batteries-power-freight-locomotives/ (last visited April 9, 2024).
10. CARB Support Document, *supra* note 5, at 5.
11. *Id.* at 4–5.

CARB estimates the In-Use Locomotive Regulation will impose compliance costs of $13.8 billion through 2050, with annual costs exceeding $1 billion for several years.[12] The rule does include a Hardship Extension that could delay compliance by up to three years for eligible small railroads, but CARB has accepted that smaller railroads reliant on older locomotives may be bankrupted by its rule and thereby cause communities to lose access to rail service.[13]

3. CARB's Rule Would Reduce Freight Rail's Ability to Compete with Trucks

In its Final Statement of Reasons, CARB claims it "did not find empirical research that focused on the impact of regulatory costs on freight diversion or mode shifts from rail to trucks."[14] This mirrors an earlier claim contained in CARB's Initial Statement of Reasons.[15] However, CARB had, in fact, commissioned a 2016 study from the Rail Transportation and Engineering Center ("RailTEC") at the University of Illinois at Urbana-Champaign, which found that a CARB-style locomotive rule

> is likely to result in: increased operating costs, delays and network disruption due to locomotive exchange; decreased locomotive utilization, increased locomotive fleet size and the capital cost of establishing extra regional alternative-technology locomotive maintenance, servicing and fueling facilities. According to the European experience, the net result of these outcomes will likely be a decrease in freight rail market share.[16]

According to the latest *Journal of Commerce* Intermodal Savings Index, U.S. shippers could save 27% on annual intermodal rail contracts compared to truckload contracts in the

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12. *Id.* at 33. *See also* California Air Resources Board, "Locomotive Fact Sheets," CARB website, *available at* https://ww2.arb.ca.gov/our-work/programs/reducing-rail-emissions-california/locomotive-fact-sheets (last visited April 9, 2024).
13. California Air Resources Board, "Staff Report: Initial Statement of Reasons," Public Hearing to Consider the Proposed In-Use Locomotive Regulation (Sept. 20, 2020) at 200, *available at* https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/isor.pdf [hereinafter ISOR].
14. California Air Resources Board, "Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response," Public Hearing to Consider the Proposed In-Use Locomotive Regulation (Oct. 27, 2023) at 192, *available at* https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/fsor2.pdf.
15. ISOR, *supra* note 13, at 31.
16. University of Illinois at Urbana-Champaign Rail Transportation and Engineering Center (RailTEC), "Transitioning to a Zero or Near-Zero Emission Line-Haul Freight Rail System in California: Operational and Economic Considerations" *Final Report for the State of California Air Resources Board* (Spring 2016) at xii, *available at* https://ww2.arb.ca.gov//sites/default/files/classic/railyard/docs/uoi_rpt_06222016.pdf [hereinafter RailTEC Study].

fourth quarter of 2023.[17] Some share of regulatory compliance costs will undoubtedly be borne by rail customers through higher rates. These added regulatory costs will reduce the price differential between rail and truck freight service and will in turn reduce rail's competitive advantage over trucks, particularly in the markets in which it most aggressively competes with trucks.

4. A Modal Shift from Rail to Truck Would Increase Transportation Sector Emissions

According to EPA, when compared to freight rail, trucks produce approximately 10 times as much carbon dioxide (CO_2), more than three times as much fine particulate matter ($PM_{2.5}$), and two-and-a-half times as much nitrogen oxides (NO_X) per ton-mile.[18] Table 1 provides a breakdown of pollutant emissions intensity by mode.

Table 1: U.S. Freight Transportation Emissions, Rail vs. Truck

Freight Mode	**CO_2 (grams/ton-mile)**	**NO_X (g/ton-mi)**	**$PM_{2.5}$ (g/ton-mi)**
Rail	20.7	0.29	0.0082
Truck	210.0	0.74	0.0270

Source: U.S. Environmental Protection Agency, *2023 SmartWay Online Shipper Tool: Technical Documentation*, Tables 11 and A-1 (Oct. 2023).

CARB attempts to dismiss concerns about rail-truck modal shift by arguing that a separate truck emissions rule will significantly reduce the emissions of trucks operating in California, thereby negating the emissions increases associated with freight mode substitution.[19] However, CARB's methodology is simplistic and does not distinguish between truck-tractor types or how those various types are used in transportation.[20]

Even if CARB's truck emissions regulations survive their present legal challenges, truck-tractors with sleeper cabs—particularly those of owner-operators registered out of state—

17. Ari Ashe, "Intermodal savings held steady in Q4, in line with long-term averages," *Journal of Commerce* (Feb. 6, 2024), *available at* https://www.joc.com/article/intermodal-savings-held-steady-q4-line-long-term-averages_20240206.html (last visited April 9, 2024).
18. "2023 SmartWay Online Shipper Tool: Technical Documentation," U.S. Environmental Protection Agency (Oct. 2023), Tables 11 and A-1, *available at* https://www.epa.gov/system/files/documents/2023-10/420b23042.pdf.
19. California Air Resources Board, "Truck vs. Train Emissions Analysis," CARB website (Sept. 23, 2020) at 4, *available at* https://ww2.arb.ca.gov/resources/fact-sheets/truck-vs-train-emissions-analysis (last visited April 9, 2024).
20. California Air Resources Board, "Truck vs. Train Methodology," CARB website (Sept. 23, 2020), *available at* https://ww2.arb.ca.gov/sites/default/files/2024-02/Truck%20vs%20Train%20Methodology%209-23-2020_0.pdf.

will face delayed compliance deadlines.[21] It is these trucks that are expected to disproportionately absorb line-haul rail movements. As the RailTEC study commissioned by CARB warns:

> The shift of freight from rail to truck reduces the emissions benefits of the alternative locomotive technologies. Technologies that showed emissions reductions before mode shift may show increases in emissions when the induced truck emissions are included in the calculations.[22]

Given that trucks emit far more pollutants than trains to move the same volume of freight, a modal shift from rail to truck would increase the air pollution emissions intensity of the transportation sector. CARB's In-Use Locomotive Regulation, by reducing rail's cost advantage to trucks, can thus be expected to increase total emissions—at least until zero-emission locomotives are developed and commercialized for line-haul service. Given that long-haul freight movements occur across state lines, CARB's rule would also have the expected effect of increasing emissions in neighboring states.

Conclusion

CARB's In-Use Locomotive Regulation mandates unproven technology and would impose large compliance costs. The resulting negative effect on intermodal freight transportation competition would likely increase nationwide emissions. For these reasons, EPA should deny CARB's Section 209(e) authorization request.

Respectfully submitted,

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21. California Air Resources Board, "Advanced Clean Fleets Regulation Summary," CARB website (May 17, 2023), *available at* https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-summary (last visited April 9, 2024).
22. RailTEC Study, *supra* note 16, at 103.