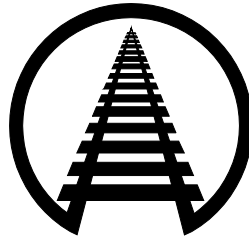


TESTIMONY OF
IAN JEFFERIES
PRESIDENT & CHIEF EXECUTIVE OFFICER
ASSOCIATION OF AMERICAN RAILROADS



BEFORE THE
UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON CLEAN AIR, CLIMATE, AND NUCLEAR SAFETY
CLEANER TRAINS: OPPORTUNITIES FOR REDUCING EMISSIONS FROM
AMERICA'S RAIL NETWORK

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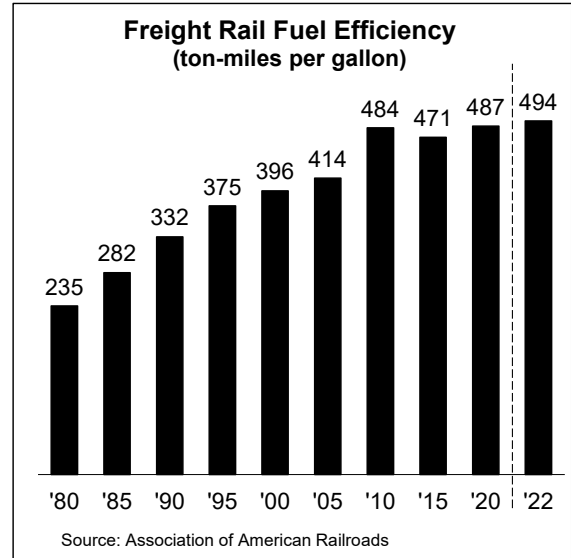
On behalf of the members of the Association of American Railroads (AAR), thank you for the opportunity to testify. AAR's members account for the vast majority of freight railroad mileage, employees, and traffic in Canada, Mexico, and the United States. Amtrak is also a member of AAR, as are several commuter railroads that account for more than 70 percent of U.S. commuter rail trips.

Shipping freight via railroad substantially drives down emissions. Today, freight railroads make up approximately 40 percent of U.S. freight long distance ton-miles while accounting for only 1.8 percent of transportation-related greenhouse gas (GHG) emissions. As cumulative global emissions and CO₂-attributable warming continue to rise annually, freight railroads recognize the urgency of continuing to reduce their own emissions. Every North American Class I railroad has an approved emissions reduction target with the Science Based Targets Initiative, an organization driving ambitious climate action in the private sector and working to curb temperature rise and mitigate climate change-related impacts. Freight railroads are committed to finding and implementing technological and operational innovations that further improve fuel efficiency and reduce GHG emissions for themselves and their customers.

To facilitate long-term, sustainable reductions in GHG emissions, policymakers should leverage market-based competition and support proposals grounded in data and developed through a collaborative approach involving stakeholders. Freight railroads commit to remaining a responsible partner capable of delivering sustainable transportation solutions in the near- and long-term.

Railroads Are the Most Fuel-Efficient Way to Move Freight Long Distances Over Land

According to the Environmental Protection Agency (EPA), transportation accounted for 28.4 percent of U.S. GHG emissions in 2021,¹ and the vast majority of transportation-related emissions are directly attributable to fossil fuel consumption. Railroads, however, are already the most fuel-efficient way to move freight long distances over land. In 2022, Class I freight railroads moved one



ton of freight an average of 494 miles per gallon of fuel—roughly the distance from Wilmington, Delaware to Columbus, Ohio or Huntington, West Virginia to Atlanta, Georgia.

Freight railroads, on average, are three to four times more fuel efficient than trucks. The recent "U.S. National Blueprint for Transportation Decarbonization" (Blueprint), a joint effort between EPA and the Departments of Energy (DOE), Transportation (DOT), and Housing and Urban Development, identified modal shift as a key means to reduce transportation-related emissions:

Road freight vehicles such as trucks...are the largest contributor to freight emissions....Using more efficient modes...is essential to reduce overall transportation emissions and energy use. Using more efficient modes could also reduce the number of vehicles on the road and reduce congestion, improving travel time and traffic flow, thereby further reducing GHG emissions and other harmful air pollutants.²

¹ Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021 (April 2023)*, Tables ES-5, A-95, and A-98.

² Available at <https://www.energy.gov/sites/default/files/2023-01/the-us-national-blueprint-for-transportation-decarbonization.pdf>.

Based on data from the Federal Highway Administration (FHWA) and the American Transportation Research Institute, if just 10 percent of the freight that currently moves by Class 7 or 8 trucks (the largest trucks) moved by rail instead, fuel savings would be around 1.8 billion gallons per year and annual GHG emissions would fall by more than 20 million tons—equivalent to taking 4.1 million cars off the highways or planting 300 million trees. Additionally, as noted in the Blueprint, moving more freight by rail reduces highway congestion and associated emissions, as a train carries the freight of several hundred trucks. Decreasing congestion also reduces highway wear and tear and the need to build new highways.

Policymakers Should Restore the Highway Trust Fund (HTF) to a User-Pays System

The United States has historically relied upon a “user-pays” system for federal funding of public road and bridge infrastructure. Unfortunately, the user-pays model has been eroded in recent years as HTF revenues have not kept up with inflation and investment needs, requiring repeated general fund transfers—\$275 billion since 2008—to cover the shortfall. The federal tax on diesel fuel is currently 24.4 cents per gallon and has been unchanged since 1993. It would be approximately 50 cents per gallon today if adjusted for inflation alone.

This shift has artificially distorted the freight transportation marketplace by making trucks appear less expensive than they really are and putting freight railroads, who pay for building, maintaining, and improving their own infrastructure, at a disadvantage. Congress should reaffirm the “user pays” standard and eliminate existing modal inequities stemming from trucking’s underpayment into the HTF.

One way to accomplish this goal is through the imposition of a fuel tax increase and, eventually, a vehicle miles traveled fee (VMT) that takes into account vehicle weight. Freight railroads support DOT’s expeditious completion of a Highway Cost Allocation Study, as

directed in the Infrastructure Investment and Jobs Act (IIJA), which will help Congress better ensure different highway users, including commercial motor vehicles, cover their fair share of costs to maintain our nation's roads and bridges.

Railroads Are Constantly Working to Improve Fuel Efficiency

On a ton-miles per gallon basis, rail fuel efficiency in 2022 was up 110 percent over 1980 and up 25 percent over 2000. From 2000 through 2022, U.S. freight railroads consumed 11.8 billion fewer gallons of fuel and emitted 133 million fewer tons of carbon dioxide than they would have if they had not improved their fuel efficiency. Railroads have accomplished this through billions of dollars invested in technological innovations and improved operating practices, including:

- Acquiring or retrofitting thousands of more fuel-efficient, lower-emission locomotives
- Developing higher-strength, lighter-weight railcars that save fuel by allowing for heavier loading and employing more aerodynamic designs.
- Incorporating anti-idling systems known as Automatic Engine Start Stop and Auxiliary Power Units that shut down the locomotive and restart it when needed, which reduces unnecessary fuel waste and idle time by 50 percent.
- Developing and installing fuel management and network optimization systems that calculate the most fuel-efficient speed for a train over a given route; determine the most efficient spacing and timing of trains; minimize the need to slow or stop trains during trips; and monitor locomotives to ensure peak performance. These systems can improve fuel efficiency by up to 14 percent.

Railroads are also working to incorporate and expand the use of some technologies, such as trip optimizer, which the Federal Railroad Administration (FRA) must approve. It is important that railroads be permitted to use trip optimizer for the first and last mile of movements as it will save millions of gallons of fuel per year and reduce emissions in and around rail yards and customer facilities. Unfortunately, railroads' applications for permission to continue testing and approval of a product safety plan have been pending before the FRA for more than 18 and 6 months, respectively.

Policymakers Should Ensure Railroads Have Access to Low-Carbon Fuels

Freight railroads are working with locomotive manufacturers and refiners to test higher percentage blends of low-carbon fuels, including biodiesel and renewable diesel, which could result in substantial GHG emissions savings. The Blueprint noted, "Sustainable fuels can play a key role in reducing rail emissions, especially in the near and medium terms, but they are currently not cost competitive." Additionally, many freight railroads struggle with a lack of consistent availability of these fuels.

Freight railroads encourage policymakers to support mode-neutral programs to domestically produce a sufficient supply of sustainable fuels and construct the necessary infrastructure to ensure supply meets demand. These programs will provide essential scaling to assist railroads in reducing emissions associated with their existing locomotive fleets. However, policymakers should ensure that programs that prioritize the availability of alternative fuels for one mode do not undermine the ability of railroads and other modes to access these fuels.

Additionally, policymakers should support research to ensure that sustainable fuels are developed from a broad base of feedstocks, minerals, and other natural resources. For example, freight railroads are supportive of DOE's "Clean Fuels and Products Shot" to accelerate the development of low-carbon fuels for rail and other modes of transportation from various biomass and renewable fuel sources, such as municipal waste, agricultural and forest trimmings, algae, and carbon dioxide. This effort will be essential to driving down costs and scaling up the technology to manufacture these fuels.

Railroads are Working Diligently to Reduce Emissions in Their Yards

The work of efficiently moving freight across the nation begins in rail yards. At these busy hubs, rail employees sort rail cars to build trains and transfer containers and trailers

between trucks and rail. Using powerful equipment, a large rail yard can handle thousands of rail cars each day, with each rail car potentially weighing 140 or more tons.

Railroads recognize that every operational decision and piece of equipment in their yards represent an opportunity to reduce GHG and criteria emissions and lessen impacts on local communities. Through a disciplined, innovative, top-to-bottom approach, railroads are lowering emissions from the moment a train pulls into the yard to when its cargo leaves either by train or truck, including investments in:

- Zero-emission intermodal cranes that eliminate a significant source of emissions while reducing ambient noise.
- Low-emitting natural gas hostlers that reduce criteria emissions by up to 90 percent compared to diesel hostlers, and early testing of battery-electric hostlers.
- Diesel switcher locomotive filters that reduce particulate matter emissions and improve air quality near yards.
- Switcher locomotives powered by experimental battery and hydrogen fuel cell technologies.

Yards are also where railroads pass the baton to their trucking partners, who haul containers to their final destination. Helping trucks get in and out of yards quickly reduces idling, fuel usage, and, ultimately, emissions. Railroads have deployed mobile apps to expedite truckers' entire intermodal experience. Many yards also have biometric scanners that recognize truck drivers' thumbprints, video portals that automatically read truck ID numbers, and apps that provide receipts and digital paperwork as part of Automated Gate Systems.

Railroads are Working to Accelerate the Viability of Zero-Emission Locomotives

Today, numerous railroads are participating in demonstration programs for alternative fuel line-haul and switcher locomotives that hold great promise. Railroads, suppliers, and academic institutions are testing and researching technology, including:

- Battery-electric locomotives through real-world pilots of line-haul locomotives in a hybrid configuration, as well as switcher locomotives that are foundational to yard

operations. A 3-month demonstration in California's San Joaquin Valley used this prototype locomotive along with two traditionally-powered locomotives and found that this configuration reduced fuel consumption and GHG emissions by at least 10 percent.

- Hydrogen Fuel Cell Locomotives, including zero-emission line-haul and switcher locomotives that have the potential of replacing diesel locomotives.

It is important to note that railroads have committed to purchase some zero-emission locomotives for the purpose of testing these locomotives. Significant research still needs to be conducted for these locomotives to become competitive with diesel-powered locomotives in terms of safety, reliability, and functionality. As the Blueprint notes: “[Freight rail research should be prioritized] to determine the most promising paths to decarbonization, including ... the design and manufacture of new locomotive propulsion and fueling systems.”

Railroads appreciate policymakers continuing to include rail eligibility for DOE research and ensuring that railroads are regularly consulted to determine which research projects will best advance the commercial viability of these respective technologies. Accelerated, widespread availability of these technologies is important as locomotives are capital assets with extended economic lifespans, and delay would slow potential fleet transition and the rail industry's ability to join the net-zero emissions economy.

Railroads Appreciate Policymakers' Efforts to Help the Industry Reduce Emissions

Freight railroads urge policymakers to support grant and loan programs that will ensure the rail industry is able to successfully reduce emissions now and fully decarbonize when such technologies are commercially viable and operationally safe and reliable. These programs help short line railroads reduce emissions by modernizing and/or retrofitting their equipment and assist locomotive manufacturers and other rail suppliers in re-equipping, expanding, or establishing facilities to produce alternative fuel locomotives or related technologies and equipment.

Freight railroads praise the bipartisan solutions developed by this Committee in the IJA to address these concerns. One such program within this Committee's jurisdiction is the Diesel Emissions Reduction Act (DERA) program, which provides grants to retrofit existing technologies, such as locomotives, to significantly reduce emissions or long-duration idling. Freight railroads are also supportive of the bipartisan efforts being undertaken by Chair Carper and Ranking Member Capito to extend the authorization of this program through S. 2195, the DERA Act of 2023. This program and others administered by DOE, EPA, DOT, and the U.S. Department of Agriculture will play a critical role in reducing emissions and addressing the health impacts on communities.

Policymakers Should Allow Railroads to Transition Their Locomotive Fleets Once Zero-Emission Locomotives are Operationally Safe and Reliable

Policymakers should avoid imposing prescriptive means for reducing emissions in the rail industry. Because zero-emission locomotives are only now in the demonstration/prototype stage, short-sighted mandates that attempt to immediately reduce emissions via premature replacement of locomotive fleets would compel freight railroads to purchase newer internal combustion engines that will then be in service for decades.

Instead, as the Blueprint discussed, "[a]ll levels of government and the private sector should align their efforts to enact solutions through technical assistance and collaborative work." It is essential that any plan for reducing rail emissions be the result of a partnership with industry and, as called for in the Blueprint, provide "safe, effective, affordable, and sustainable solutions to existing and emerging challenges." Rail stands ready to engage in a collaborative partnership with the federal government to reach goals based on "[t]imely and impartial data collection and analysis" and timelines grounded in a realistic understanding of the current state of technology.

Policymakers Should Oppose the California Air Resources Board's (CARB) Untenable Locomotive Rule

As noted above, railroads are committed to furthering their sustainability and being a valuable part of a competitive economy that supports quality jobs. Railroads' past partnerships with CARB have successfully reduced emissions from main-line and yard operations across the state. Unfortunately, CARB has decided to forego the proven path of collaboration in favor of regulations that lack legal authority and display a casual, willful disregard for technological realities and federal law. While the spirit behind CARB's proposed regulation is consistent with the rail industry's environmental commitments, the rule itself is unworkable and unfeasible.

That's why AAR and the American Short Line and Regional Railroad Association filed suit in June against CARB's proposed rule that would prohibit the operation of federally certified locomotives in California based on an arbitrary date established as a locomotive's "useful life," while also mandating railroads replace their existing locomotive fleets with zero-emission locomotive technologies that do not yet exist.

Despite a lack of viable zero-emission locomotives, CARB's rule would charge railroads that operate locomotives within the state billions of dollars in total annually. These fees would also apply to short line railroads that provide critical first- and last-mile service on lower density branch lines and are capital-intensive, low-margin small businesses. CARB has conceded the costs of implementing the rule would bankrupt some short lines and has failed to acknowledge the impacts of the elimination of short line rail service to Californians, including eliminating an efficient means to market, rising costs of products, and a modal shift to trucks.

Furthermore, it is important to note that the freight rail industry is not a combination of discrete, unconnected railroads; rather, it is a single interconnected system of six Class I railroads and hundreds of short line railroads that own and maintain nearly 140,000 route-miles of track.

Additionally, at any given time, roughly 5 to 10 percent of the line-haul locomotives being operated by the six Class I railroads are owned or leased by another railroad. This allows for railroads to maximize the efficiency of locomotives and reduce transportation time by eliminating the need to exchange locomotives when moving from one railroad's line to another. As a result, it is common to see line-haul locomotives from railroads in the United States, Canada, and Mexico operating far from the owning railroad's tracks. This interconnectivity is only possible through the minimization of technical and operational differences among locomotives in each railroads' fleet.

In recent proceedings, CARB has conceded that this regulation will have substantial impacts on railroad operations not only in California, but on a national level and that it intends for railroads to modify their entire fleets to comply with the regulation. It is simply not appropriate for an individual state to impose such tremendous burdens on interstate commerce.

Conclusion

America's freight railroads offer a simple, cost-effective, and meaningful way to reduce transportation-related GHG emissions by reducing fuel consumption in transportation. Railroads are already working in earnest to meet ambitious emission reduction targets. They look forward to working with members of this Committee, other policymakers, and their suppliers and customers to ensure railroads remain a responsible partner capable of delivering sustainable transportation solutions in the near term and for the long haul.