Testimony of

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Before the

United States House of Representatives
Committee on Transportation and Infrastructure

Subcommittee on Railroads, Pipelines,
and Hazardous Materials

Hearing on America Builds: The Role of Innovation and
Technology in Rail Modernization

June 24, 2025

Good Morning, Chairman Webster, Ranking Member Titus, and distinguished members of the Rail Subcommittee. My name is David Shannon and I serve as General Manager of RailPulse LLC. I am appearing before the Committee today on behalf of the diverse coalition of member companies who comprise the owners of RailPulse.

Why RailPulse

RailPulse, LLC was chartered in 2021 by a coalition of forward-thinking railcar owners who joined together to drive growth in the use of rail freight transportation in North America by enabling improved service and safety through the collaborative use of railcar telematics data. RailPulse believes that telematics on railcars provides information necessary to address the critical issues that rail customers identified as causing them to prefer truck over rail leading to erosion in rail market share[1]:

1. **On-time Performance** – When telematics devices are deployed at full network scale, railroads can leverage the railcar data to improve yard operations, interline movements, and empty capacity management, resulting in greater velocity, resiliency, and predictable on-time performance.
2. **Equipment/Capacity** – At individual fleet scale, railroads and car owners can better manage railcar availability and utilization by minimizing disruptions due to unplanned railcar maintenance and by having better visibility of empty capacity on the railroads and in customer facilities allowing more optimal and timely routing of railcars to meet shipper demand.
3. **Shipment Visibility** – For any telemetry equipped railcar, shippers gain visibility to their empty or loaded movements giving them better insights into where their shipments are, what condition they are in, and should anything go wrong, the basis for a productive dialog with their serving railroad and a better customer experience.

The vision of the coalition is to create a central platform (The RailPulse Platform) providing a single source of truth for telemetry data on the location, condition, and health of all railcars in

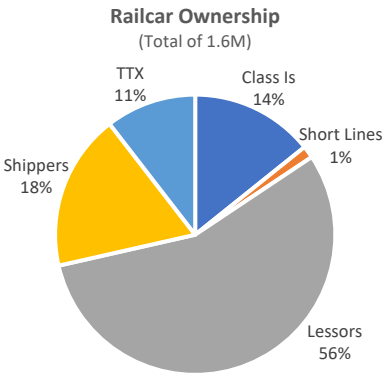
[1] Flexible Freight and the Future of Rail, 2020 North American Shipper Survey, Oliver Wyman, December 2020

North American revenue service. Through the RailPulse Platform, the coalition aims to transform the North American freight rail industry by sharing telematics data that delivers accurate, timely insights to railcar owners and to all parties of a rail shipment, while driving railcar telematics innovation, data standards, performance requirements, and proactive sensor network management.

RailPulse's goals in creating a North American railcar telemetry platform are aligned with national policy. Ultimately RailPulse is about making rail service offerings more useful and attractive to shippers, which we believe will lead to growth in rail, an extremely safe and fuel-efficient mode of surface transportation. Specifically, on a ton-mile basis, rail is 28 times safer for both the public and workforce. It is four times more energy-efficient, which is crucial for reducing overall energy consumption and dependence. And it produces significantly less greenhouse gas emissions than trucking – trucking produces 11.5 times more while moving only 1.5 times more freight[2]. If RailPulse succeeds, we will have a safer, more energy-efficient transportation system with fewer greenhouse gas emissions and reduced highway congestion. Regardless of how you look at it, growth in rail market share is a very important public good.

Structure & Governance

From its inception, RailPulse has been structured to reflect the diversity in ownership of the roughly 1.6 million railcars in service across North America. It is designed to benefit all constituents in the rail ecosystem to drive carload growth: shippers, Class I railroads, short line railroads, and railcar operating lessors, all while enhancing the safety and security of proprietary car-owner data. Each stakeholder has an equal voice in the governance of RailPulse and its policy decisions to ensure that the coalition stays focused on what is best for the North American rail industry rather than a single stakeholder or industry class.



[2] Growth in the Freight Rail Industry, Adriene Bailey, Railway Age, August 2024

Founded by five railcar owning companies in 2021, today RailPulse is owned by a coalition of companies representing all four railcar owning classes: Bunge NA, a shipper; GATX, Greenbrier, and Trinity Rail, railcar lessors; G&W, Railroad Development Corporation, and Watco, short line railroads; and, CPKC, CSX, Norfolk Southern, and Union Pacific, Class I railroads.

Goals

RailPulse is focused on solving the rail industry's most pressing competitive and technological challenges associated with providing visibility into the movement of rail freight. Sharing common goals that will benefit the entire rail ecosystem is the foundation of the RailPulse coalition. The RailPulse members recognized that working independently would result in slow, incremental adoption of the latest GPS and telematics technologies and siloed access to the data. Working together as a coalition unifies our expertise and resources to take the entire rail industry forward. Rather than duplicating efforts, through RailPulse, railcar owners are now collaborating and aligning to not only speed adoption but also foster greater innovation.

The RailPulse coalition has five key goals:

1. **Create a comprehensive platform** that acts as a single source of truth for telematics data across the rail industry. By standardizing, centralizing, curating, enriching, and securing data from a variety of telematics vendors, the platform ensures that all stakeholders—ranging from shippers to railroads—can seamlessly access and utilize this information. The graphic below illustrates the role of the RailPulse Platform in the rail ecosystem

2. **Facilitate collaboration** among shippers, carriers, and car owners, to build a unified framework that encourages synergy across all sectors of the North American freight rail system. By integrating shared telematics data and insights, RailPulse empowers stakeholders to optimize operational efficiencies, elevate service standards, and enhance safety practices. This collaborative approach not only contributes to the growth of freight movement but also creates a resilient and interconnected ecosystem that benefits the entire rail industry.
3. **Foster transparency** into rail shipment movements and deliver advanced insights into the estimated time of arrival for both loaded and empty railcars. By providing precise and actionable data, this goal aims to enhance supply chain productivity, enable better planning, and improve shipper satisfaction across the North American rail freight ecosystem.
4. **Advance the use of telematics technology** to enhance the management and maintenance of the railcar fleet. By utilizing real-time data from cutting-edge sensors and GPS devices, the coalition aims to enable predictive maintenance practices that optimize asset utilization, extend the operational lifespan of railcars, and create a healthier, more reliable fleet. This approach not only enhances the efficiency and effectiveness of rail operations but also contributes to a safer transportation network by proactively identifying and addressing potential issues before they escalate.
5. **Drive telematics innovation** by clearly specifying the desired outcomes for monitoring the location, condition, and health of railcars—critical elements for the long-term success and growth of rail freight. RailPulse prioritizes a results-driven approach where innovations are evaluated based on their conformance to performance requirements rather than rigid design or technology specifications. This ensures that vendors retain the freedom to innovate and push the boundaries of telematics technology while delivering solutions that enhance reliability, safety, and efficiency across the rail ecosystem.

Getting Started

To jump start its development, the coalition sought and was awarded a CRISI (Consolidated Rail Infrastructure and Safety Improvements) grant. The grant, alongside the support of the Federal Railroad Administration (FRA) and the State of Pennsylvania, provided seed funding for RailPulse to evaluate the state of telematics technology, to test its fitness for use across the North American

rail network, and to develop and demonstrate a neutral, open-architecture telematics platform designed to provide a shared source of truth on the location, condition, and health of railcars.

The CRISI grant facilitated a multiple phased project, concluding in mid 2024, that involved over 1000 railcars equipped with modern telematics sensors, including GPS units, impact sensors, load sensors, door/hatch sensors, and handbrake sensors. Diverse types of railcars, including tank cars, boxcars, hopper cars, auto racks, and gondolas were used in the trials to ensure comprehensive data collection across different freight categories. The project engaged multiple telematics vendors specializing in sensor technology and data analytics, demonstrating interoperability within a common platform across a diverse vendor ecosystem while fostering technology innovation. These outcomes created the baseline for the RailPulse Platform, set the foundation for broader railcar telematics adoption, and highlighted the transformative potential of equipping the entire fleet with advanced telemetry.

Today

Today, RailPulse is transforming rail shipping by leveraging the latest technologies to gather and share real-time railcar location, health and condition information. It enables data from GPS and railcar-mounted sensors to drive improved service levels, visibility, safety, sustainability, and productivity into North American rail-based supply chains.

The RailPulse Platform was officially launched and made available to all railcar owners and stakeholders in North America in September 2024.

Opportunities & Challenges

1. **Growth to Value Paradox**

   Since launching, RailPulse has been rapidly bringing on new subscribers who are equipping railcars and using the data. On one hand the growth in the number of installed railcars has been substantial (over 17x the initial test population) while on the other hand it has not been nearly substantial enough to deliver broad systemwide benefits that contribute to the promised public good resulting for more use of rail transport.

As with all new technology startups, companies that are engaging with RailPulse and are equipping railcars tend to be early adopters who are doing so based on the expected benefits that they can directly obtain from the technology. As such, railcar equipping tends to happen on a fleet by fleet, customer by customer basis where the needs are most acute and the benefits can be realized primarily through better individual shipment visibility, shipper-railroad collaboration and dispute resolution, and similar transactional optimizations or where individual fleet utilization improvements can be obtained. Railcar growth can continue in this way for a long time but at a very measured pace.

The paradox lies in the fact that, while when measured by traditional metrics the growth RailPulse has experienced since launching is great, it is still not good enough. This is because the public benefits can only be unlocked by achieving a critical mass of telemetry equipped railcars—beyond 50% full fleet penetration. At critical mass, railroads can begin to leverage telematics data to change railroad operating practices, new safety regimes can be contemplated and implemented, and even broadscale predictive railcar maintenance strategies can be implemented. In aggregate, these network wide actions, and their associated benefits will be transformative to the rail industry because they will lead to measurable improvements in network efficiency, service, safety and ultimately growth in the use of freight rail by shippers. With this growth the industry will deliver the public good that this technology promises.

To accelerate the adoption of telematics network wide, we need to break out of the traditional technology adoption pattern. That will require incentive for railcar owners to equip railcars faster. Ultimately, we believe that financial incentives need to be introduced that will encourage equipping railcars when the transactional benefits alone are unknown or insufficient to justify the car owner's investment. This will bring more car owners into the market and drive adoption of larger fleets faster.

The RailPulse Coalition intends to seek additional funding opportunities to incentivize rail car owners to adopt telematics technology and become subscribers to the RailPulse Platform. This adoption incentive will align itself with the goal of getting more cars online faster and getting the rail car fleet closer to the coalition's goals of the larger systemic

benefits like predictive estimated time of arrival, predictive maintenance requirements, critical safety alerts, and supply chain efficiencies that reduce the cost of freight rail moves to shippers and carriers. We believe that supporting future grant funding for these benefits is in the public interest. In fact, both the European Union and India are both countries who have participated in grant funding to outfit rail telematics across their freight rail fleets.

2. Rail Telematics Innovators Dilemma

One of the key reasons the US leads the world in technology innovation is the fail-fast ethos that permeates our technology sector. This mindset encourages rapid experimentation and learning by embracing failure as a natural part of the innovation process. The rail industry needs to be incentivized to adopt a similar ethos and be strongly supported when they do.

Development of unproven technology is inherently costly and technically complex which makes investment risky. On top of that, in the rail industry, there also exists a pervasive concern that the innovation process might create liabilities for the companies that test innovative but unproven technologies or that even if their innovation is proven successful in testing, an alternative technology may be mandated by the government that makes their investment moot. Thus, we have a dilemma where there is belief in the potential of the technology but a fear of being a first mover, even where internal investment is available, due to the risk exposure of loss it might create.

We need a regulatory environment wherein the innovators don't fear being penalized when leading the charge in new technology development. The RailPulse Coalition needs to be able to experiment with new technologies and new devices to prove them out. The coalition has a mechanical committee that recommends the adoption of performance criteria that any device and the data it generates must meet before an expectation of use is created or regulated. Especially for monitoring technologies (those that don't directly control the operation/use of a railcar), the rail industry needs to be able to test innovative solutions without fear of negative ramifications. The coalition simply asks that coalition members, rail car owners, and technology vendors should be free within agreed upon

parameters to innovate and test technology solutions before they are proven and when proven those technology innovations will be supported.

Conclusion

In closing, I again want to thank the committee for its invitation to be here today to discuss this exciting time in the freight rail industry. Working collaboratively as car owners the entire industry is making history as we utilize the latest in technologies working with our technology partners and vendors to push the limits of rail telematics for decades to come. By working together with this committee, FRA and the rail coalition we have a tremendous opportunity to convert the entire fleet of 1.6 million rail cars into smart rail cars and in the process change the way rail shippers, regulators, communities, rail employees and investors view the freight rail industry.