WRITTEN TESTIMONY OF

WABTEC CORPORATION, ON BEHALF OF THE RAILWAY SUPPLY INSTITUTE

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

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Chairman Webster, Ranking Member Titus, and Members of the Subcommittee, thank you for the opportunity to testify at today's hearing on rail innovation and technology. My name is Eric Gebhardt, and I serve as Executive Vice President and Chief Technology Officer of Wabtec Corporation. I appear this morning on behalf of the Railway Supply Institute (RSI), the trade association representing nearly 200 manufacturers, component suppliers, and technology companies that support America's freight and passenger railroads. Together, RSI's members have more than 725 rail supply locations in 46 states and 277 congressional districts. RSI represents an industry that has over 1.6 million railcars drawn by more than 28,000 locomotives on 140,000 miles of rail. They design, build, and maintain the equipment, digital systems, and services that advance the mission of safety, innovation, technology, and sustainability within the rail industry.

Rail is vital to our nation's economy and mobility. It is also one of the safest modes of transportation – and technology has been central to achieving that record. In my testimony today, I will discuss how modern rail technology is not only optimizing operations but also saving lives and ensuring a more reliable rail network, and suggest policy steps to sustain this progress.

Wabtec's Legacy and Global Impact

Wabtec's history is deeply rooted in rail innovation, dating back to its founding in 1869 with a breakthrough that fundamentally improved rail safety: the invention of the automatic air brake by our founder, George Westinghouse. Wabtec has built on this heritage of innovation, and today operates in over 50 countries with a workforce of over 29,000, including 12,000 in the United States. With the combined expertise of legacy Wabtec, GE Transportation, and others, the company has unmatched engineering and digital capabilities and a portfolio spanning from locomotives, braking systems, digital solutions, and propulsion technologies that enhance the performance of rail networks worldwide.

Wabtec plays a key role in advancing rail infrastructure through strategic partnerships, acquisitions, and investment in emerging technologies. Wabtec's commitment to research and development ensures that the rail industry continues to evolve to meet the needs of modern transportation. Beyond North America, Wabtec has a significant presence in Europe, Asia, Africa, South America, and Australia. This international footprint enables Wabtec to leverage global best practices and collaborate with rail operators worldwide to drive advancements in transportation systems and rail networks. Despite increasing competition from foreign manufacturers, Wabtec remains a leader in locomotive and transit solutions by investing in proprietary technology and maintaining strong partnerships with international rail authorities. In an era where global rail infrastructure is rapidly evolving, Wabtec continues to provide innovative solutions that keep it at the forefront of the industry.

Representing the Rail Supply Community

While my testimony highlights Wabtec capabilities, I speak for a much wider coalition of suppliers, large multinationals and specialty shops alike, whose innovations span everything from castings and fasteners to machine-vision inspection portals and cloud-based dispatching software. In 2020, the rail supply industry directly employed almost 240,000 workers, who contributed $27.7 billion of value-added economic activity across the U.S. When the direct, indirect, and induced contributions of the sector's activities are combined, the U.S. rail supply industry's total economic impact was $75.8 billion of GDP, 682,000 jobs, $49.0 billion of labor income, and $15.5 billion in taxes

Collectively, RSI members:

- Deliver the critical hardware and software that Class I, shortline, and passenger railroads rely upon to meet federal safety standards; and
- Anchor an American industrial base that faces rising foreign competition yet remains indispensable to resilient domestic supply chains.

A shared commitment to rail safety and innovation binds the entire RSI community. Wabtec approaches this critical issue through the lens of a global locomotive and digital solutions supplier charged with turning concept into deployable technology. Building on three domains: 1) accident prevention, 2) asset health awareness, and 3) network utilization, our engineers translate industry needs into scalable hardware and software that railroads can utilize today.

Accident Prevention

Accident prevention in today's rail network is built on a system of in-cab, train handling, and wayside technologies supplied by Wabtec and other RSI members.

Wabtec's positive train control technology (PTC), the Interoperable Electronic Train Management System (I-ETMS) is a safety overlay that continuously monitors train location and speed and will intervene to prevent accidents. This system is now installed on more than 24,000 North American locomotives across all Class I freight railroads and many commuter lines. It is specifically designed to prevent train-to-train collisions, overspeed derailments, incursions into established work zones, and movements of trains through misaligned switches.

Additionally, wayside-to-asset communication systems offer numerous new benefits to enhance efficiency, safety, and overall performance. A robust communication system enables real-time information exchange between trains and the wayside infrastructure. This allows for enhanced safety features, such as automatic train control, collision avoidance systems, and early warning mechanisms for potential hazards.

This integrated approach gives railroads and regulators tools to prevent and mitigate accidents, and it exemplifies how Wabtec and the broader RSI membership are turning continuous improvement into concrete safety gains.

Asset-Health Monitoring

In addition to train control, Wabtec and RSI have been at the forefront of deploying asset health monitoring and predictive maintenance systems. Preventing the next derailment requires seeing the earliest signs of mechanical trouble. Wabtec is a pioneer in the inspection and monitoring of rail assets to improve safety through our KinetiX Inspection Technologies portfolio. These technologies focus on the rail vehicles and infrastructure themselves – using sensors, analytics, and connectivity to continuously assess the condition of locomotives, freight cars, and track components. By detecting emerging problems early, asset monitoring systems allow railroads to fix issues proactively before they lead to failures, accidents, or service delays.

Integrating machine vision, laser scanning, remote sensing with acoustic and thermal technology, load monitoring, and AI-driven analytics, the technology sets the standard for automating inspection processes, enhancing asset availability and life, significantly reducing operational costs and service disruptions. This is about being proactive rather than reactive: finding the tiny warning signs in mountains of data and acting on them, instead of waiting for something to go wrong.

Wabtec's artificial intelligence capabilities facilitate predictive maintenance, minimizing unplanned downtime and improving asset utilization. By integrating AI-driven diagnostics with real-time monitoring, we help railroads reduce mechanical failures and increase train reliability. For example, our Railcar Telematics portfolio includes state-of-the-art sensors that turn freight cars into smart connected assets that allow operators and shippers to see the GPS location of freight and better manage the safety and maintenance of the fleet.

This improved fleet reliability means higher network utilization – railroads can use their locomotives and cars more effectively and schedule trains with more confidence that each trip will go as planned. It also reduces maintenance costs over time, since repairs can be scheduled optimally and asset life is extended by fixing issues before they cause damage. In short, modern asset health monitoring is making rail operations more predictable, efficient, and safe. It exemplifies how digital technology and big data analytics are being harnessed to tackle age-old challenges of railroad maintenance and safety,

Network Utilization

The examples of PTC and asset health monitoring all underscore a fundamental point: modern technology is the key to taking rail safety and efficiency to the next level. These innovations prevent accidents, optimize operations, and improve asset health in ways that were not possible

with traditional methods. They complement the skill and experience of railroad workers with precise automation and data-driven insight, resulting in safer and more productive railroads.

These safety gains are compounded when trains flow smoothly through the network. For example, Wabtec's Trip Optimizer is a smart cruise control system for trains certified by the U.S. EPA to deliver 10% fuel savings. Considering the terrain, train make-up, speed restrictions, and operating conditions, it calculates an optimum speed profile. It can automatically control the locomotive throttle and dynamic brakes to reduce fuel burn and provide efficient train handling onboard locomotives. The system is installed on over 11,000 locomotives globally and has saved over 400 million gallons of fuel, cutting carbon emissions by over 500,000 tons annually. Based on the typical price for No. 2 diesel fuel, Wabtec has saved customers hundreds of millions of dollars in fuel expenses.

Similarly, real-time planning solutions optimize train scheduling and improve network throughput while reducing congestion and energy use. By leveraging predictive analytics and AI-enhanced decision-making, technologies enable freight and passenger trains to operate more efficiently within existing infrastructure. Even in rail yards, cloud-based yard management platforms can integrate inventory, switch lists, and crane operations to eliminate cascading delays that often ripple onto the main line. Improved yard fluidity through automation can lead to reduced idle times and locomotive fuel consumption. In addition, fewer yard conflicts translate directly into fewer human movements between tracks, a leading cause of injuries.

Hardware that underpins safer, cleaner operations

Freight and passenger rail operators across North America rely on Wabtec locomotives to deliver safe and reliable operations for our customers. Continuing to invest in new and modernized locomotives, along with the development of a portfolio of alternative fuel capabilities to meet a variety of operator needs, will be vital to the continued competitiveness of freight rail relative to other modes.

- **Freight Locomotives:** Wabtec's Tier 4 locomotives represent the most advanced diesel-electric locomotives available today. These locomotives meet the Environmental Protection Agency's (EPA) stringent Tier 4 emissions standards, which require a 76% reduction in nitrogen oxide (NOx) and a 70% reduction in particulate matter (PM) emissions, compared to previous generations. With over 1,000 Tier 4 locomotives in operation, Wabtec continues to set the standard for sustainable rail transportation. Railroads adopting these locomotives benefit from improved fuel efficiency and a reduced environmental footprint.
- **Locomotive Modernization Programs:** Wabtec modernizes aging locomotive fleets to extend their operational life while incorporating the latest efficiency and safety

enhancements. These efforts have resulted in up to 30% improvement in fuel efficiency and a more than 50% increase in haulage ability.

- **Hybrid and Alternative Fuel Technologies:** Wabtec is investing in hybrid-electric and alternative fuel technologies to support a range of next-generation propulsion technologies. The development of fuel-flexible, battery-electric and hydrogen internal combustion engine locomotives represents a significant step toward implementing innovative technology solutions and increasing energy efficiency within the rail sector.

Policy recommendations

Thanks to sustained private sector and federal investment in rail technology, the industry has made great strides. We have seen the virtual elimination of certain types of collisions and derailments through PTC; we have dramatically cut fuel waste and emissions through smart automation; and we are catching maintenance issues long before they would historically have been discovered. All of this translates into a stronger rail network that can transport more goods, more safely, and at a lower cost. With freight demand expected to grow and with heightened attention on supply chain resilience, these technology-driven gains are more important than ever – they help railroads handle growth while maintaining the highest safety standards and reliability.

But continued progress is not automatic. It depends on ongoing innovation and deployment of new technologies across the industry. Railroads, suppliers, and government must work together to ensure that we fully leverage the latest advances (such as artificial intelligence for inspection, or automation for operational efficiency) and that we do so without undue delay.

To promote rail safety and efficiency through technology, we encourage Congress to:

1. Sustain and grow grant programs, particularly the Consolidated Rail Infrastructure and Safety Improvements (CRISI) program, with dedicated set-asides for digital safety and advanced inspection platforms. With the growing adoption of life-saving and efficiency-enhancing innovations by railroads of all sizes, these federal programs have been critical to accelerating the deployment of these technologies nationwide.
2. Expand research, development, demonstration, and deployment of next-generation rail technologies. Increasing the FRA's research and development budget and establishing public-private partnership programs will help drive the next wave of innovation – for example, advancements in artificial intelligence for track and equipment inspection, autonomous or remotely operated trains for certain applications, enhanced cybersecurity for rail systems, and energy-efficient technologies.
3. Modernize and streamline regulatory processes so that railroads can more readily, test, evaluate, and adopt new safety technologies. Current regulations, while well-intentioned

for safety, can sometimes be inflexible or overly prescriptive, inadvertently hindering the adoption of improved technologies.

Conclusion

In conclusion, modern technology has become an indispensable driver of rail safety, reliability, and efficiency. These improvements benefit everyone – they protect our communities, make our supply chains more efficient, and help our economy grow. Wabtec Corporation, together with the Railway Supply Institute and its member companies, is committed to developing technologies that move the needle on safety and performance. We appreciate the support Congress has shown through past initiatives, and we believe continued partnership is crucial. By sustaining investment in rail technology deployment, supporting research and pilots, and modernizing the regulatory framework, Congress can help the rail industry deploy the next generation of life-saving, efficiency-enhancing technologies. On behalf of Wabtec and RSI, I want to thank the Committee for the opportunity to provide this testimony. We look forward to working with you to ensure our nation's rail network remains the safest and most efficient in the world. I am happy to answer any questions you may have.