

**Prepared Statement of  
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**House Committee on Transportation and Infrastructure**

**“The Business Case for Climate Solutions”**

**March 17, 2021**

**Introduction**

Chairman DeFazio, Ranking Member Graves, and members of the Committee, I appreciate the opportunity to testify on the critical topic of transportation and climate change. My name is Rafael Santana, and I am the President and CEO of Wabtec Corporation – a global leader in rail technologies for over 150 years.

President Biden and Congress have pledged to build a clean energy economy. The “Build Back Better” plan is committed to address climate change, significantly reduce carbon emissions and spur job growth. The transportation sector is a critical piece of *building back better*. Across the globe, transportation accounts for nearly one quarter of all greenhouse gas (GHG) emissions.<sup>1</sup> Current trends indicate that freight and passenger rail activity will more than double by 2050.<sup>2</sup> Therefore, the United States will require even cleaner and more energy-efficient transportation solutions if it is to continue being a leader in addressing climate change.

The freight rail sector, in addition to being the most sustainable way to move people and goods over land, is in a unique position to contribute to this endeavor. By increasing utilization of our world-class freight rail network and developing zero-emission locomotives; together, we can reduce emissions by up to 120 million tons of GHG per year.<sup>3</sup> This is the equivalent of removing 26 million cars from the road or planting nearly 2 billion trees.<sup>4</sup> By pursuing increased rail utilization and zero-emission locomotives, we can create up to 250,000 jobs, all while increasing safety.

With this mind, I’m delighted to have the opportunity to introduce you to the “Freight 2030” vision for transforming the rail industry. Within the next nine years, we are committed to developing the technology to enable the expansion of freight rail utilization, accelerating the reduction of GHG emissions with battery and hydrogen-powered locomotives, and enabling safer trains through a public-private partnership between industry, academia, and the federal government.

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<sup>1</sup> The World Resources Institute

<sup>2</sup> IEA (2019), *The Future of Rail: Opportunities for energy and the environment*, IEA, Paris, <https://doi.org/10.1787/9789264312821-en>.

<sup>3</sup> Wabtec Internal Documents

<sup>4</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

Partnering on the “Freight 2030” vision for the future are Carnegie Mellon University (CMU), the nation’s leading university in artificial intelligence and robotics, Genesee & Wyoming (G&W), the nation’s largest short line and regional freight railroad, and Wabtec. By working together, we can establish a research institute committed to developing and deploying advanced rail propulsion, logistics, and safety technologies.

## **Wabtec Corporation**

Wabtec was founded in 1869 by George Westinghouse and, today, is a leader in freight rail, manufacturing advanced locomotives, freight rail parts and components, as well as advanced network logistics and digital solutions. In addition to our freight rail division, we also develop transit products and have components or parts on virtually every transit train globally.

Based in Pittsburgh, Wabtec is a proud American company at the forefront of freight rail innovation with over 27,000 employees in more than 50 countries. The company is the largest freight locomotive manufacturer, moving more than 20% of the world’s freight.

At Wabtec, we innovate and help our customers leverage rail to increase efficiency, reduce costs, and their carbon footprint. We are currently leading the way in developing battery-electric locomotives and other low-to-zero emissions technologies. BSNF Railway and California Air Resources Board are testing our newly developed FLXdrive locomotive in revenue service today on track between Barstow and Stockton, California. The FLXdrive is the world’s first heavy-haul, 100-percent battery-electric locomotive (BEL).<sup>5</sup> The locomotive features an overall train energy management system powering approximately 20,000 battery cells and delivering 2.4 MWhrs of energy. To date, FLXdrive has run over 10,000 miles and delivered an average of 10% reduction in fuel consumption across the train. This is the equivalent of 5,000 gallons of diesel fuel saved and approximately 50 tons of CO<sub>2</sub> emissions reduced. At 6 MWhrs, we have an opportunity to further reduce fuel consumption and emissions by up to 30%.<sup>6</sup>

Wabtec also leads the way in rail utilization, safety and logistics optimization technology. In 2008, Congress passed the Rail Safety Improvement Act, which mandated the implementation of Positive Train Control (PTC) systems on most of America’s railroads.<sup>7</sup> PTC systems are designed to prevent train-to-train collisions, over-speed derailments, unauthorized movements into established work zones, and accidents that occur if trains are routed down an incorrect track. Since 2008, Wabtec has supplied over 24,000 locomotives with PTC computers and software.<sup>8</sup> Over the past decade, PTC technology has revolutionized rail safety in the US and helped make the rail sector more efficient and effective. Wabtec is currently developing advanced PTC

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<sup>5</sup> <https://www.wabteccorp.com/sustainability-report>

<sup>6</sup> <https://www.wabteccorp.com/sustainability-report>

<sup>7</sup> <https://railroads.dot.gov/train-control/ptc/positive-train-control-ptc>

<sup>8</sup> <https://www.wabteccorp.com/about-wabtec>

systems that will enable virtual and moving block signaling instead of the traditional fixed block signaling used today.

These new, advanced PTC systems will significantly increase the efficiency of our railways by reducing headways between trains while maintaining stringent safety standards. Similarly, our Trip Optimizer and Movement Planner solutions optimize both locomotive fuel efficiency and real-time network planning, respectively. This enables freight to move more efficiently using existing rail networks, thereby reducing energy use, emissions, and waste. As a reference, our Trip Optimizer solution is already installed on over 11,000 locomotives globally, saving 400 million gallons of fuel.<sup>9</sup> It also reduced carbon emissions by over 500,000 tons per year – the equivalent of removing 100,000 cars from the road.

Following the great American tradition of leadership in innovation and industry, Wabtec is on the cutting edge of freight rail technology. We have the experience and know-how to lead rail's charge into a cleaner and more sustainable future.

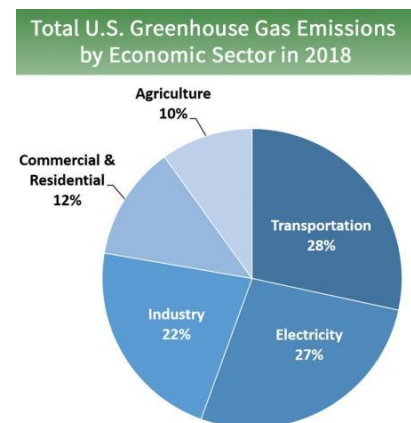
### Freight Rail's Role in the Clean Energy Economy

The United States has the most extensive freight rail infrastructure network in the world. Our 140,000 miles of track are unparalleled – long enough to stretch around the globe over five times.<sup>10</sup> This allows quick and efficient shipment of goods across our nation.

Freight rail is a critical component of today's clean energy economy. Rail can more efficiently and cleanly deliver goods than any other mode of transportation.

While freight rail leads the transportation sector in reducing emissions today, there are many more opportunities before us. For example, current trends indicate that freight activity in America will more than double in the next thirty years, with freight tonnage increasing significantly.<sup>11</sup> The U.S. will require cleaner, more energy-efficient transportation solutions. Technology adoption across rail will be an indispensable driver for the modernization of the entire transportation system, making it cleaner, safer, and more efficient, and reliable.

Trucking is an essential component of the freight shipping network, and rail must work hand-in-hand with our nation's truckers to reduce emissions, increase efficiency and safety, and more economically move goods from coast-to-coast. The U.S. will always rely on trucking to move goods, especially in first-and-last mile situations where goods are moved to warehouses, businesses, or homes. However, when moving goods longer



<sup>9</sup> <https://www.wabteccorp.com/sustainability-report>

<sup>10</sup> <https://www.aar.org/wp-content/uploads/2020/08/AAR-Railroad-101-Freight-Railroads-Fact-Sheet.pdf>

<sup>11</sup> <https://data.bts.gov/stories/s/Moving-Goods-in-the-United-States/bcyt-rqmu>

distances, trucking is less efficient than freight rail. Compared to trucking, rail produces five times less carbon emissions per ton-mile.<sup>12</sup>

### Weight of Shipments by Transportation Mode

Mode	Tons (millions)											
	2012				2018				2045			
	Total	Domestic	Export	Import	Total	Domestic	Export	Import	Total	Domestic	Export	Import
Grand Total	16,952	14,895	889	1,169	18,616	16,474	1,037	1,104	25,472	20,932	2,282	2,259
Truck	10,098	9,893	115	90	11,320	11,108	101	111	14,836	14,226	304	306
Rail	1,625	1,481	57	87	1,580	1,404	67	108	1,926	1,588	112	226
Water	959	502	76	380	1,020	542	218	261	1,183	609	201	373
Air (including tru..	11	2	5	4	12	2	5	5	41	4	19	18
Multiple modes a..	1,318	309	584	425	1,370	328	601	441	2,895	431	1,435	1,029
Pipeline	2,901	2,672	50	179	3,277	3,061	39	177	4,559	4,058	205	296
Other and unkno..	41	37	2	3	37	30	7	1	31	16	5	11

**Notes:** Data do not include imports and exports that pass through the United States from a foreign origin to a foreign destination by any mode. Numbers may not add to totals due to rounding. Data in this version are not comparable to similar data in previous years because of updates to the Freight Analysis Framework. All truck, rail, water, and pipeline movements that involve more than one mode, including exports and imports that change mode at international gateways, are included in multiple modes & mail to avoid double counting. As a consequence, rail and water totals in this table are less than other published sources.

**Source:** U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5-1, 2019, <https://www.bts.gov/faf>.

With climate change as one of our nation’s greatest challenges, the time to shift to rail is now. For example, if we increased utilization of rail by 50% for the movement of freight over 500 miles, we can reduce 60 million tons of GHG emissions per year.<sup>13</sup> That is like taking 13 million cars off the road.<sup>14</sup> If the U.S. wants to lead the world in decarbonizing the transportation sector, it should look no further than freight rail technologies and innovation.

### Freight 2030

Our plan to accelerate the future of freight rail, the “Freight 2030” vision, is to expand freight rail utilization, accelerate the reduction of GHG emissions, reduce road congestion and traffic, and make transportation in the U.S. safer for everyone. The “Freight 2030” vision seeks to reinvent U.S. freight rail by developing the technology to accelerate:

- **Decarbonization** through the creation of zero-emission locomotives.
- **Technology** that enables a 50% increase in freight rail utilization and up to 50% reduction in safety incidents, while at the same time making rail faster and more efficient.
- **Job creation** that enables 250,000 direct, indirect and induced jobs spurred by the transportation and manufacturing sectors.

<sup>12</sup> Average from AAR Climate Change Report and EDF Green Freight Handbook

<sup>13</sup> Estimated based on AAR Report: The Positive Environmental Effects of Increased Freight by Rail Movements in America, at <https://www.aar.org/data/the-positive-environmental-effects-of-increased-freight-by-rail-movements-in-america/aar-positive-environmental-effects-of-freight-rail-white-paper-62020/>

<sup>14</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

Wabtec's goal is to develop the next generation of zero-emission locomotives. Wabtec has a clear path to power new locomotives - and repower existing locomotives - with batteries, hydrogen internal combustion engines, and hydrogen fuel cells. As discussed earlier, we are testing and deploying our battery-electric locomotive and plan to commercialize it in the near future. We are currently researching applicability of battery-hybrid and hydrogen combustion engines and hope to begin development and testing of those technologies quickly. These new technologies need to be retrofittable to the current fleet of locomotives. Each diesel-powered locomotive converted to alternative energy sources can save up to 3,000 tons of CO<sub>2</sub> per year.<sup>15</sup>

Increasing rail utilization will reduce emissions across the board. Studies have highlighted that while improvement to infrastructure is important, there is significant opportunity to extract more useful capacity from the existing network.<sup>16</sup> Advancements to current signaling systems and other utilization technologies can increase network capacity by 50%. Through next-gen technology such as dynamic network and on-demand logistics planning, we can optimize heavy haul operations, increase yard capacity and cargo visibility, and grow "first & last" mile operations.

As a key partner to the railroad industry, safety is at the core of all that we do at Wabtec and will be the number one focus of our "Freight 2030" vision. Already, rail is safer than other modes of transport. For instance, there are 22 times fewer deaths and injuries per year in rail than trucking.<sup>17</sup> We estimate an increase in freight rail utilization will result in 14,000 fewer injuries or deaths per year.<sup>18</sup>

Finally, "Freight 2030" is a bold vision for job creation. Within the next three years, we estimate this initiative will create over 30,000 new jobs. In the longer term, the initiative will create 250,000 new jobs. By increasing the amount of freight trains on the railroad, we increase the need for yard, maintenance and manufacturing workers. Therefore, we believe 80% of the jobs created through our program will be blue collar jobs. This is alongside the jobs created to construct a research institute, as well as build and maintain hydrogen fueling pipelines and stations around the country.

## **The Freight Rail Innovation Institute**

To accelerate the future of rail within the next decade and at scale, we ask Congress to collaborate with Wabtec, CMU and G&W to create, coordinate, and co-fund the Freight Rail Innovation Institute (FRII). This will send a message to the entire transportation

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<sup>15</sup> Based on 300k gallons of fuel consumed per locomotive per year

<sup>16</sup> "National Rail Freight Infrastructure Capacity and Investment Study. Presented to Railroad Energy Transportation Advisory Committee" by Cambridge Systematics; Sept 2008; U.S. Freight System Modernization Necessary to Reduce Bottlenecks, Improve Security; RAND Corporation. Jun 2009.

<sup>17</sup> Wabtec calculation based on: Bts.gov, injuryfacts.nsc.org, nhtsa.dot.gov

<sup>18</sup> Wabtec calculation based on: Federal Motor Carrier Safety Administration – Large Truck and Bus Crash Facts 2018 and Bureau of Transportation Statistics

industry that together, the private and public sectors can help achieve the nation's vision of a competitive and sustainable American freight transportation network.

Moreover, this collaboration will create and fund technology research, demonstration, and commercialization initiatives that drive measurable action toward significantly increasing freight rail utilization and decarbonization of the rail network, while spurring hundreds of thousands of jobs. To that end, Wabtec proposes establishing centers of excellence in Green Power, Advanced Network Logistics, and Capacity at the FRII to bring rail into a new age of optimization and lead the world in freight rail innovation.

A public-private partnership will create new manufacturing capabilities to supply "Made in America" technologies, such as zero emission locomotives powered by battery and hydrogen fuel cells, as well as on-site hydrogen generation solutions. In addition, it will further develop research priorities, conduct research, development, and testing, and foster collaboration and action between stakeholders to ensure the U.S. maintains its competitive edge and global leadership in creating the freight rail network of the future.

## **Conclusion**

Maximizing the freight rail network and shifting to clean power requires upfront intellectual firepower and capital investment. Wabtec and our partners are prepared to invest in the Freight Rail Innovation Institute alongside the U.S. government and ask for your support in creating a clean energy future together. Let's start building America's freight rail of tomorrow today.

I greatly appreciate the Committee's attention on this matter. Thank you again for the opportunity to testify, and I look forward to answering any questions members may have.