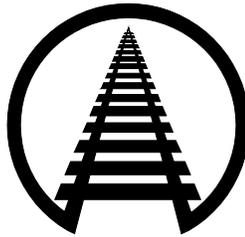


**STATEMENT FOR THE RECORD**

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**TO THE  
U.S. SENATE COMMITTEE ON  
COMMERCE, SCIENCE & TRANSPORTATION**

**“HIGHLY AUTOMATED VEHICLES: FEDERAL PERSPECTIVES  
ON THE DEPLOYMENT OF SAFETY TECHNOLOGY”**

**NOVEMBER 20, 2019**

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## **Introduction**

On behalf of the members of the Association of American Railroads (AAR), thank you for the opportunity to submit this statement for the record. AAR members include the Class I freight railroads and Amtrak. AAR unites these organizations in working toward a single goal: to ensure that railroads remain the safest, most efficient, cost-effective, and environmentally-sound mode of transportation in the world.

The development of new technologies, including autonomous vehicles, offers the unique opportunity to dramatically improve the safety of our nation's roads. These and similar technologies can also help to address many of the challenges our nation faces in improving our freight-moving capabilities to meet the needs of tomorrow. It is essential that Congress and DOT facilitate the development and incorporation of these technologies with a focus on both of these goals.

## **Autonomous Vehicles and Highway-Rail Grade Crossings**

A highway-rail grade crossing is a location where a railway and roadway intersect at the same level. There are more than 200,000 of these crossings in the United States, and, unfortunately, in 2018, there were more than 2,200 grade crossing collisions, resulting in 840 injuries and 262 fatalities.

AAR and its members have worked diligently to improve the safety of drivers and pedestrians at grade crossings, and the railroads remain committed to trying to eliminate grade crossing incidents. AAR promotes the 3 "E"s of grade crossing safety: education of the public about the dangers around railways; enforcement of traffic laws related to crossing signs and property laws related to trespassing; and engineering research and innovation to improve the safety of crossings. The railroads' efforts have contributed to a 55% reduction in the number of annual grade crossing collisions over the last 25 years, including through public safety education and awareness

campaigns conducted by Operation Lifesaver. However, regardless of these efforts and advances in train control systems, trains simply cannot stop in time to avoid vehicles or pedestrians at grade crossings, and the vast majority of these accidents are due to mistakes or poor choices made by pedestrians or motor vehicle drivers.

Autonomous vehicles have the potential to substantially improve grade crossing safety by reducing or eliminating human error by motor vehicle drivers. AAR has submitted comments to both the Department of Transportation (DOT) and this and other relevant Congressional Committees in an effort to ensure that highly automated vehicle technologies include such capabilities, and DOT has indicated the importance of grade crossing safety by including a reference in its recent guidance: *Autonomous Vehicles 3.0: Preparing for the Future of Transportation (AV 3.0)*. Motor vehicles must yield to trains, and automated vehicle systems must be designed to recognize and respond appropriately to warning devices and approaching trains. More specifically, AAR encourages DOT and Congress to ensure that autonomous vehicles have the following capabilities:

First, autonomous vehicles should be able to recognize when they are approaching grade crossings by identifying the various signs and pavement markings associated with those grade crossings. There should be sufficient technological redundancies in place in order to ensure that autonomous vehicles retain the capability to make these determinations in various types and degrees of weather conditions, as well as if signage were down or misplaced or if road conditions were seriously deteriorated. Second, autonomous vehicles should be able to detect approaching trains, including identifying locomotive headlights, horns, or bells, and account for any variables that might obstruct their view. Third, autonomous vehicles should not begin crossing tracks unless they will be able to fully move through them. Stopping on tracks because of traffic queuing or other

causes creates a dangerous situation that can be prevented with highly automated vehicle technology. Finally, it is important for designers of autonomous vehicles to understand that positive train control (PTC) is not being deployed across the entire rail network, and does not have the capability to communicate train location or speed information to highway vehicles in any event.

The incorporation of the above-mentioned capabilities into highly automated vehicles will save lives. It is imperative that Congress and DOT encourage and foster the development of such technologies.

### **The Importance and Benefits of a Level Playing Field**

Competition in the freight transportation marketplace is fierce. Railroads welcome this competition, because the industry offers a combination of price and service that freight customers want. In order to ensure that customers continue to reap the benefits of this robust competition for their businesses, however, it is essential that the government not pick winners and losers by creating policies that artificially shift freight from one mode to another.

This principle extends to the regulatory and policy framework surrounding the development and implementation of autonomous or highly automated vehicles. DOT's *AV 3.0* guidance focuses mostly on highways and notes that DOT "is in the process of identifying and modifying regulations that unnecessarily impede the testing, sale, operation, or use of automation across the surface transportation system" and that DOT "supports an environment where innovation can thrive."<sup>1</sup> Railroads respectfully suggest that the same openness to regulatory modernization should apply to all modes of transportation.

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<sup>1</sup> U.S. Department of Transportation, *Autonomous Vehicles 3.0: Preparing for the Future of Transportation*, pp. 35 and 41.

For example, automation promises to significantly enhance other areas of rail safety beyond grade crossings. Automated technologies can detect a wider range of defects, respond faster, and provide a larger window for action than a safety system that is subject to the limitations inherent in human eyes, minds, and hands. Automated track inspections can reduce track defects, leading to fewer accidents. Likewise, automated inspection of locomotives and freight cars has been shown to reduce the occurrence of broken wheels and other mechanical problems. But unfortunately, due to the current limited regulatory framework, many new technologies can only be used in conjunction with, rather than as a replacement for, manual inspections required by existing Federal Railroad Administration (FRA) regulations. Railroads can sometimes obtain a temporary FRA waiver from existing regulations, but that process is often cumbersome and uncertain. These regulations discourage investment in innovative technologies.

Because automation in the rail industry is new and unfamiliar, regulators will be pressured to identify and resolve every possible risk before allowing testing or early deployment. That pressure must be resisted, because hesitation will come at a cost to safety. DOT recognized this in the context of autonomous vehicles in *AV 3.0*, when it claimed that “delaying or unduly hampering...testing until all specific risks have been identified or eliminated means delaying the realization of global reductions in risk.”<sup>2</sup> DOT should realize these safety benefits for rail, as well, by encouraging early deployment of autonomous or highly automated technology on railroads. Unlocking the many potential benefits of automated technology is just as important for railroads as it is for other transportation modes.

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<sup>2</sup> *Autonomous Vehicles 3.0: Preparing for the Future of Transportation*, op. cit. p. 2.

## **General Principles for the Regulation of Automated Technologies**

In formulating a regulatory framework that ensures a level playing field for all modes of transportation and that encourages the realization of the benefits of emerging technologies, railroads urge Congress and DOT to adhere to several principles.

First, limited short-term waivers from existing regulations do not give industry sufficient confidence to invest in new technologies. Regulatory barriers must be overcome in ways that are more enduring than waivers. For example, Congress could direct DOT to make permanent long-standing waivers whose value has been proven through successful implementation. Additionally, DOT could issue waivers of indefinite duration and provide procedures for the expedited conversion of time-limited waivers to permanent waivers or final rules if equivalent or improved safety has been demonstrated.

Second, to the greatest extent possible, carriers and equipment manufacturers should be permitted to continue to create voluntary standards for safety technology. No one has a greater stake in the success of new safety technologies than carriers and their suppliers, and market pressures already incentivize them to create and implement safety technologies that work.

Third, new regulations governing automated operations in the transportation sector should be performance-based, rather than prescriptive. This will focus industry attention and effort on the outcome, rather than on how that outcome is achieved. Performance standards would give industry discretion to experiment with new ways to improve safety, while still being subject to DOT oversight, which would oversee goal-setting, ensure that measures and data are accurate, and impose sanctions if carriers failed to meet their safety targets. As such, employees, customers, and the public at large would still be fully protected.

Fourth, regulation of automated operations should occur at the federal level to avoid a patchwork of state and local rules that would create confusion and inhibit the deployment of safety

technology. State and local laws governing rail safety and operations are already preempted by federal law and regulation, and it is especially critical to the efficient functioning of the national rail network that the principle of a uniform set of national regulations not be undercut by state or local laws targeting autonomous or highly automated technologies.

Last, as with any new technology, public fear of the unknown is often unfounded but can prove to be a major obstacle. The public can and will read much into what DOT and FRA say, or do not say, on the issue of automated technologies. We urge DOT and FRA to be supportive of innovation and work to facilitate the realization of the benefits of these technologies.

## **Conclusion**

As FRA Administrator Ron Batory has stated, “Technology will move faster than the ink can be applied or dried [on regulations]. And if we don’t unleash technology, it will pass us up.” Autonomous vehicles and highly automated technologies can make our society safer and the movement of freight more efficient than it has ever been. It is essential that DOT and Congress set goals for the incorporation of certain essential capabilities, while also providing a regulatory environment that incentivizes industry to be constantly developing new, and improving existing, technologies.