TESTIMONY OF

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BEFORE THE

SUBCOMMITTEE ON RAILROADS, PIPELINES AND HAZARDOUS MATERIALS

OF THE

HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

ON "OVERSIGHT OF POSITIVE TRAIN CONTROL IMPLEMENTATION IN THE UNITED STATES"

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The American Public Transportation Association is a non-profit international association of more than 1,500 public and private member organizations, including transit systems and high-speed, intercity, and commuter rail operators; planning, design, construction, and finance firms; product and service providers; academic institutions, transit associations and state departments of transportation. APTA members serve the public interest by providing safe, efficient and economical transit services and products.

Introduction

Chairman Denham, Ranking Member Capuano, and members of the Railroads, Pipelines, and Hazardous Materials Subcommittee, on behalf of the American Public Transportation Association (APTA) and its more than 1,500-member organizations, I thank you for this opportunity to testify on the oversight of passenger and freight rail safety.

We appreciate the subcommittee's attention to the critical issues of rail safety and positive train control, and the challenges publicly-funded commuter railroads have encountered in implementing this technology.

My name is Paul Skoutelas, and I am the President and Chief Executive Officer of the American Public Transportation Association. Before joining APTA this January, I served in leadership positions on numerous boards and committees for transportation organizations, including on APTA's Board of Directors and Executive Committee, the Transportation Research Board, National Transit Institute, Pennsylvania Transportation Institute, and the Transit Cooperative Research Program.

Before APTA, I was national director of WSP USA's Transit & Rail Technical Excellence Center where I provided strategic direction on transit and rail projects.

Prior to WSP, I was the chief executive officer at two prominent public transportation agencies – the Port of Authority of Allegheny County, Pittsburgh, Pennsylvania, and the Central Florida Regional Transportation Authority (LYNX), Orlando, Florida. While heading these agencies, I oversaw the successful implementation of major capital programs including the South Hills Stage II Light Rail Program, the North Shore Rail Connector, a comprehensive rail station improvement program, major rail rolling stock acquisitions and three Bus Rapid Transit projects; the Airport/West Busway, the Martin Luther King, Jr. East Busway Extension and the Orlando/LYMMO BRT.

About APTA

The American Public Transportation Association (APTA) is a non-profit international association of more than 1,500 public and private member organizations, including transit systems and high-speed, intercity, and commuter rail operators; planning, design, construction, and finance firms; product and service providers; academic institutions, transit associations and state departments of transportation. APTA members serve the public interest by providing safe, efficient, and economical public transportation services and products.

Safety is APTA's number one priority. It is more than an operating principle and a promise to our riders; it is a core value of every APTA member. The men and women responsible for managing and operating public transportation systems are fully committed to the safety of their systems, passengers, employees and the general public.

Throughout our 136-year history, APTA and its predecessor associations have been leading advocates for safety improvements. We publicly supported the concept of positive train control

(PTC) prior to the Rail Safety Improvement Act (RSIA) of 2008, and we advised policymakers and members of Congress on the need for proven technology, adequate resources and an expanded radio spectrum necessary to put PTC into operation.

We are working with our member railroads to meet the law's requirements that all of the nation's commuter railroads have federally-approved systems that help protect against accidents that could be avoidable with PTC fully operational.

Public Transportation Industry Safety and Initiatives

Public transportation generally, and commuter and passenger rail specifically, are among the safest modes of transportation. In fact, the use of public transportation can reduce exposure to high-risk activities, particularly for groups with higher than average auto accidents and fatalities.

Commuter and intercity rail have 0.36 passenger fatalities per billion passenger miles, compared with 6.53 passenger fatalities for automobiles or light trucks.

According to the U.S. Department of Transportation's National Highway Traffic Safety Administration, the 2016 U.S. road fatality rate was 1.18 per 100 million vehicle miles traveled, and 11.59 per 100,000 population.

The Federal Railroad Administration's Office of Safety Analysis reports that of the more than 703 million passengers who travelled 110,541,557 miles on passenger rail systems in 2016, there were 267 recorded fatalities, most of which were not train passengers but rather individuals trespassing on tracks.

While PTC is the focus of this hearing, PTC is just one component of creating an effective safety culture. Safety begins with the commitment of the organization and senior leadership, working in collaboration with employees to adopt common safety goals and expectations.

The transit and commuter rail industries have been leaders on safety improvements during the more than 20-year period when standardized systems and procedures were developed to ensure safer service and work environments.

For example, APTA created a Rail Safety Audit Program in 1989 to develop and implement a uniform format for rail system safety and to provide assessments for a transit system to determine the degree to which safety issues were effectively being addressed. This program was subsequently adopted in 1996 by the U.S. Department of Transportation's Federal Transit Administration as the base guideline for its federal state safety oversight requirements. Today, all commuter rail agencies have Safety Management Program Plans, the frameworks of which are based upon APTA's Rail Transit Safety Audit Program.

APTA is an industry-recognized Standards Development Organization (SDO) and has published many transit standards. These industry-developed standards continue to contribute greatly to ongoing safety improvements. APTA has written more than 270 standards and recommended practices, 74 of which address particular safety needs for mainline passenger rail equipment and

111 for rail transit alone. For example, in the mid-1990's, APTA developed the Passenger Rail Equipment Safety Standards (PRESS) program to develop safety standards for commuter rail cars. These standards help improve the safety of public transportation systems by examining vehicle crashworthiness, passenger door systems, emergency lighting and evacuation, and new benchmarks to improve the safety of vehicle interiors including seat attachment strength and workstation tables.

Finally, APTA partners with the Federal Railroad Administration (FRA), Association of American Railroads (AAR) and labor organizations in developing regulations to help design, build, and operate safe transportation systems. In this regard, APTA is an active industry representative within the Rail Safety Advisory Committee (RSAC). Recently FRA and the public transportation industry collaborated on the language for new safety rules specific to high speed rail equipment. APTA and our commuter rail agencies will continue such cooperative efforts as we maintain a strong emphasis on safety.

Positive Train Control (PTC)

As the members of this committee are aware, the Rail Safety Improvement Act (RSIA) of 2008 mandated the installation of positive train control (PTC) technology on passenger railroad and certain freight railroads by December 31, 2015. Following numerous congressional hearings, industry analyses and a Government Accountability Office (GAO) report, Congress determined that it was necessary to extend the initial implementation deadline. Surface transportation authorization legislation passed in 2015 changed the PTC deadline to December 31, 2018. The statute also allows FRA to grant extensions up to 24 months for commuter railroads that have demonstrated sufficient progress toward complete installation. The specific milestones include installing all PTC hardware, acquiring all necessary spectrum, making sufficient progress on revenue service demonstration (RSD) and employee training, as well as submitting a revised schedule for completion. APTA has always supported the statutory deadline and is committed to assisting all our commuter railroads in the implementation of PTC.

As defined in the statute, a positive train control system is a "system designed to prevent train-to-train collisions, over speed derailments, incursions into established work zone limits, and the movement of a train through a switch left in the wrong position." When RSIA was drafted in 2008, there was no off-the-shelf technology capable of achieving these safety objectives for all railroads. Many commuter railroads have long made use of collision avoidance systems that have helped protect against certain accidents in recent years. Since the enactment of RSIA, APTA and its commuter rail members across the country have aggressively pursued the funding and technology necessary to implement the PTC mandate by the statutory deadline.

Commuter railroads have faced, and continue to face, a variety of complex challenges in pursuit of compliance. PTC was still being developed and some forms of the technology were still in FRA's approval process at the time of the initial deadline. Only after the technology was available could railroads begin installing and testing the systems on an enormous and complicated network of interconnected railroads while still providing service to millions of Americans across the country.

Many commuter railroads have done a commendable job overcoming these significant hurdles, but others are continuing to grapple with implementation issues. Commuter rail systems provide important transportation in and around many of our metropolitan regions, and demand for commuter rail service continues to grow, especially as ridership increases.

PTC Technology Development

PTC is a predictive enforcement system of subsystems overlaid on existing systems. Though commuter railroads are currently in the process of installing these systems, a one-size-fits-all approach to implementation does not exist. Each commuter railroad has its own unique and complex operating environment and PTC systems must be tailored to meet those operating requirements.

For example, commuter railroads interoperating with freight railroads typically use a variant of PTC called I-ETMS. Other railroads without extensive freight interoperability requirements may use another variant called E-ATC. As such, what works for one commuter railroad may not work for another. This means that each passenger rail system needs to build its own unique PTC solution, and it is that absence of a proven, off-the-shelf technology that has created uncertainty about whether a new solution will work as intended.

PTC is deployed by passenger and commuter railroads in three (3) basic forms:

1) I-ETMS^{TM} (Interoperable – Electronic Train Management System): Those railroads that share track with the freight railroads would need to install a system known as I-ETMS, a GPS based technology heavily dependent on the nationwide 200 MHz radio network. All wayside elements are monitored and reported to the locomotive. Track conditions and restrictions are delivered to the locomotive and reported to the operator for action. The system monitors the action of the operator and reacts if safety is compromised. I-ETMS supports interoperability with the freight carriers. I-ETMS received type approval from FRA on February 4th, 2015.

2) ACSES (Advanced Civil Speed Enforcement System): Those railroads that operate on the Northeast Corridor will be installing an Amtrak developed system known as ACSES, which uses track mounted transponders to deliver information to the locomotive. ACSES also monitors actions of the train operator and intervenes if safety is compromised. It also facilitates interoperability among operators on the Northeast corridor. ACSES variants received type approvals from FRA between 2010 and 2013.

3) E-ATC (Enhanced Automatic Train Control)**:** Those railroads are typically smaller operations and do not require complex interoperability with other operators are installing a system known as E-ATC, a track circuit based system that is somewhat simpler and therefore less expensive than either I-ETMS or ACSES. E-ATC was the last major variant to receive approval from FRA, which occurred on March 11th, 2016.

In general, the following components are required for a complete installation of PTC:

Locomotives:
All locomotives and other operating equipment must be fitted with onboard computers, radios, display units, and event recorders. Numerous configurations of equipment are in service including self-propelled cars and push-pull equipment adding to the complexity and cost of deploying on board systems. Most of the equipment must be reconfigured to accommodate these components, which has led to higher costs and longer schedules to implement PTC than initially predicted.

Wayside:
The wayside equipment that needs to be installed is also extensive and includes Wayside Interface Units (WIU), switch monitors, wayside radios, base stations, and transponders (if required), among other components. All wayside components, such as switches and signals, are connected to WIUs, which are linked to either the locomotive or central control. The status of the components via WIUs is delivered to the locomotive to inform the operator. Many railroads were required to upgrade track components such as switches and signals to be reported by the WIUs. Commuter railroads face the same challenges in equipping the wayside components as do the freight railroads, but with far more limited development and testing resources.

Communications (Spectrum and Towers):
Spectrum was put in place after significant efforts by the public transportation industry. Many commuter railroads attempted to secure spectrum on the secondary market, only to encounter issues such as questions about ownership and legal authority to sell, unavailability in required geographic areas, and cost prohibitive contractual requirements. Some railroads contracted their spectrum usage to the host railroads on which they operate, which created other issues that needed to be addressed.

Public railroads also are subject to contractual constraints imposed by their local and state legislatures. Sole source procurements as required to implement PTC can take an exceedingly lengthy period of time to complete. Additionally, commuter railroads with small procurements as compared to freight railroads do not receive priority status in the procurement chain.

Back Office:
The back office stores millions of rail network data points as encrypted information (e.g., speed limits, track layouts, speed of other trains on the system, train compositions, etc.) and transmits the authorization for individual trains to move into new track segments. Operating PTC on commuter railroads present a variety of back office requirements. Those that dispatch their own and perhaps other trains need to invest in the complete set of upgraded dispatch systems and Back Office Servers (BOS). Some commuter railroads operate on a mix of tracks that are sometimes dispatched by other railroads.

Railroads installing I-ETMS are required to maintain extensive back office capability in order to interact with the overall PTC network. This capability is generally beyond the resources of commuter railroad operators. Recognizing this as a key constraint, APTA in conjunction with the FRA worked with the supply community to develop a cloud-based back office system. FRA provided approximately $5 million in 2015 for this initiative. The shared back office provides

for efficient operations, software maintenance, communications software updates, train initialization, and other key features. Several suppliers now offer this service.

Employee Training:
All employees who perform dispatch, operations, signaling, as well as roadway workers and supervisors, must be trained and are essential for successful PTC implementation and operation.

Positive Train Control Progress

The commuter rail industry continues to make steady progress in implementing PTC according to updated analyses conducted by APTA. According to the most recent aggregated data from the fourth quarter of 2017:

➢ 89 percent of all spectrum has been acquired;
➢ 70 percent of the back office control systems are ready for operation;
➢ 71 percent of 26,136 employees have been trained in PTC;
➢ 66 percent of the 1,297 radio towers that will need to be erected have been completed;
➢ 55 percent of the 4,047 locomotives and cab cars are PTC-installed; and
➢ 40 percent of the 2,826 route miles are in testing or demonstration, while awaiting FRA approval.

It is also important to note that progress on hardware installation on locomotives and cab cars, as well as wayside towers is only shown when completed. This means if an operator has installed 80 percent of the necessary hardware on 10 locomotives, that progress would not be reflected in quarterly reports.

Since mandating PTC installation in 2008, the federal government has provided $272 million in PTC grants to commuter railroads, $197 million of which was only awarded at the end of May 2017. An additional $30 million was awarded by FRA to MeteorComm, a private rail communications company, to help research and develop the new technology.

Two commuter rail operators have also secured federal loans to help pay for installation, one for $220 million and the second for $967.1 million. While this financing has been helpful, the burden of repaying these loans still falls on public agencies that are already under financial pressure.

To date, cost of full implementation of PTC is estimated to be approximately $4 billion, which does not take into account future operating and maintenance costs currently estimated to range from $80 million to $130 million annually. For publicly-funded agencies that rely on federal, state, and local funding, as well as passenger fares to operate their service, this number is staggering.

These costs are in addition to the existing $90 billion backlog needed to bring the current public transportation system into a State of Good Repair (SGR), as estimated by the U.S. Department of Transportation. A June 2013 survey of our commuter railroad agencies found that many commuter railroads have state of good repair needs that far outweigh their capital budgets, even

before including the additional costs associated with implementing PTC. Capital investments such as replacing bridges (some of which that are more than 100 years old), rehabilitating outdated locomotives, and upgrading tracks, safety systems, and signal and communication systems were deferred to fund PTC.

We request that Congress and the administration consider these costs and provide additional funding so that publicly-funded commuter railroads can implement and operate PTC, as well as tend to the massive backlog of system safety upgrades. Additional funding would not only help commuter railroads continue to hit necessary milestones, but it would also allow them to address critical and costly interoperability challenges and system-wide reliability improvements after PTC deployment.

While funding has been an issue for many commuter railroads, there are other challenges to PTC implementation. The installation and commissioning of PTC requires highly qualified signaling engineers. With so many agencies implementing PTC at the same time, available expertise in the field has been scarce. Similar to the limited number of signaling engineers, the demand on manufacturing and test facilities to produce the equipment has also been a significant challenge for the industry. Accessing and acquiring spectrum has also proven to be a major hurdle in the implementation process. Overall, the lack of experts and resources in relevant fields has limited the ability to expedite implementation at each stage of the process.

Additionally, each commuter rail agency continues to serve its customers throughout the installation of PTC. This creates a delicate balance between access to tracks and locomotives for installation, and reductions in service to riders. Similarly, PTC must have the ability to interface and function with neighboring systems and other operators that share a section of track. This is particularly difficult in metropolitan areas where several different carriers operate on one section of track. Interoperability requirements continue to evolve and will require our industry to work on common issues to facilitate faster progress.

Looking forward, many railroads are reaching a crucial step for PTC implementation known as Revenue Service Demonstration (RSD) and it would be beneficial for the railroads to understand common success criteria to achieve and receive approval from FRA. Issues may arise when tenant railroads are granted extensions and allowed by FRA to continue operating, but are perceived as a business risk to the host railroads who may not allow them to continue running service. The passenger rail industry continues to work with suppliers to obtain parts, but closer cooperation is required to achieve implementation by the deadline.

Finally, the public transportation industry is also concerned that FRA may not have adequate highly-skilled staff to respond to the magnitude of documentation that is required for PTC approval, especially as we approach the end of 2018. APTA urges Congress to ensure FRA has the resources and technical staff to facilitate PTC implementation.

APTA and PTC

APTA has been engaged in the issue of PTC since the initial release of the Rail Safety Act. These efforts include:

➢ Participating in conjunction with the member railroads in the Rail Safety Advisory Committee meetings, providing coordinated comments on the draft provisions leading to the publication of the final rule.

➢ Taking an active role with our members in the deliberations of AAR's Interoperable Train Control (ITC) committee to draft the ultimate requirements for PTC as deployed by the freight railroads, now held by AAR as industry standards.

➢ Providing testimony at NTSB public hearings on PTC technology.

➢ Working diligently on behalf of the industry in pursuit of 220 MHz radio spectrum including numerous meetings with FCC and the commissioning of a major industry study documenting the overall requirement.

➢ Supporting the development of hosted back office service technology in conjunction with the FRA and the supply community. This service provides I-ETMS-deploying railroads with a cost-effective alternative to having their own back office.

APTA then worked with AAR and the American Short Line and Regional Railroad Association (ASLRRA) to bring together all appropriate parties and experts to share information and to help expedite PTC implementation. APTA also organized a PTC symposium where representatives of freight railroads provided their extensive expertise in PTC implementation. Commuter railroads that share tracks with freight railroads need planning to be incorporated into the interoperability testing schedule of freight railroads. These PTC symposia, which were attended by passenger rail CEOs and chief engineers, senior leadership of FRA, representatives from APTA, AAR and ASLRRA, included presentations from passenger and freight railroads that had progressed far enough to provide insights based on their installation experiences. As part of APTA's Annual Meeting in October 2017 in Atlanta, GA, our Commuter Rail CEOs Committee heard a detailed presentation by a passenger railroad that had implemented PTC. Among the issues discussed were ongoing testing challenges, timelines for submittals, approvals by FRA, and interoperability requirements.

These symposia and leadership meetings led to the establishment of "user groups," starting in 2013, to share information and encourage coordinated actions. User group meetings have been held in various parts of the country including Denver, CO; St Louis, MO; Chicago, IL; Philadelphia, PA; Denton, TX; Washington, DC; Salt Lake City, UT; and West Palm Beach, FL. Attendees included representatives from the FRA, commuter and passenger railroads that are implementing I-ETMS and E-ATC, as well as technical and engineering professionals, suppliers, and consultants. ACSES implementers have their own user group organized by Amtrak.

The user group meetings focus on software release issues, lessons learned during implementation and testing, and best practices for submittals. Work is underway to establish common formats for critical submittals and actions. These common formats are anticipated to facilitate a faster review process by FRA.

Additionally, APTA hosted an industry PTC Summit that included CEOs and senior engineering staff from all commuter railroads, FRA senior leadership, and representatives from Congress who reinforced the importance of PTC implementation. Our association is compiling and expanding information on PTC implementation status provided to FRA on a quarterly basis. This information is provided to PTC user groups and has been used to inform Congress, NTSB and other stakeholders.

APTA will continue to facilitate the user groups by establishing collaboration sites on the APTA web site and by scheduling regular communications. We will continue to collect and expand information on the status of implementation by our members. APTA is also continuing to participate on the Train Control Communications and Operations Committee composed of FRA, AAR, ASLRRA, and the Transportation Technology Center, Inc. (TTCI) to investigate the prospects of next generation PTC and associated supporting technologies.

APTA has consistently included PTC implementation as a key topic at our major meetings and will continue to do so at upcoming conferences, including our Annual Legislative Conference this March in Washington, DC. Programming will include congressional staff panels, regulatory agency presentations, and committee meetings.

Conclusion

On behalf of APTA, I want to reiterate the public transportation industry's long standing and continued commitment to install PTC. As a former transit CEO in Pittsburgh and Orlando, I know first-hand how passionate public transportation leaders are about the safety of our riders, employees and communities. We joined this industry to make a difference in the lives of millions of people by providing access to opportunities. We don't just move people; we connect people to what they need, love, and aspire to achieve – and we do it safely and reliably.

APTA is grateful for the work this committee has done to enhance safety on our nation's railroads. We look forward to continuing to work with you and your staff on this and many other common issues that face public transportation agencies.