

THE STATE OF POSITIVE TRAIN CONTROL IMPLEMENTATION IN THE UNITED STATES

(115–55)

HEARING

BEFORE THE

SUBCOMMITTEE ON RAILROADS, PIPELINES,
AND HAZARDOUS MATERIALS

OF THE

COMMITTEE ON
TRANSPORTATION AND
INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED FIFTEENTH CONGRESS

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Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

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September 7, 2018

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Railroads, Pipelines, and Hazardous Materials
FROM: Majority Staff, Subcommittee on Railroads, Pipelines, and Hazardous Materials
RE: Subcommittee Hearing on “The State of Positive Train Control Implementation in the United States”

PURPOSE

The Subcommittee on Railroads, Pipelines, and Hazardous Materials will meet on Thursday, September 13, 2018 at 10:00 a.m. in 2167 Rayburn House Office Building to receive testimony on the status of implementing positive train control (PTC) on the freight and passenger rail network.

BACKGROUND

Elements of Positive Train Control

PTC describes technologies designed to automatically stop or slow a train before certain accidents occur — specifically, train-to-train collisions, derailments caused by excessive speed, unauthorized incursions by trains onto sections of track where maintenance activities are taking place, and movement of a train through a track switch left in the wrong position. A fully functional PTC system must be able to precisely determine the location and speed of trains; warn train operators of potential problems; and take action if the operator does not respond to a warning. For example, if a train operator fails to stop a train at a stop signal, the PTC system would apply the brakes automatically.

There are two primary types of systems—overlay and standalone— that functionally meet the PTC requirements. An overlay system allows railroads to install PTC components over existing rail infrastructure and operate the train in accordance with the existing signals and operations in the event of a PTC system failure. A standalone system may be used for new locations, as a replacement for an existing signal or train control system, or to enhance the capabilities of the current method of operation.

There are more than 20 major PTC components that are currently in various stages of development. In order to implement PTC that meets federal requirements, railroads need to integrate and install those components across the rail network. The Association of American Railroads (AAR) has reported that freight railroads will spend a total of \$10.6 billion and additional hundreds of millions each year to maintain PTC systems.¹ The cost of PTC for passenger rail is estimated at \$3.5 billion.² Railroads have made progress on PTC implementation, yet challenges still remain.

Legislative History

The Rail Safety Improvement Act of 2008 (RSIA, P. L. 110-432), Division A, included a requirement that certain freight, commuter, and passenger rail lines install PTC by December 31, 2015. The PTC mandate followed a September 12, 2008, accident in California, where a Metrolink commuter train collided head-on with a freight train in the Chatsworth district of Los Angeles. The scene of the accident was a curved section of single track on the Metrolink Ventura County Line just east of Stoney Point. According to the National Transportation Safety Board (NTSB), which investigated the cause of the collision, the Metrolink train ran through a red signal due to the engineer being distracted by text messages. After running the red signal, the commuter train entered a section of single track where the opposing freight train had been given the right of way by the train dispatcher. In the resulting collision, the Metrolink locomotive telescoped into the passenger compartment of the first passenger car and caught fire. All three locomotives, the leading Metrolink passenger car, and seven freight cars were derailed and both lead locomotives and the passenger car fell over. Tragically, there were 25 fatalities and 135 other individuals were injured.

Section 104 of RSIA amended title 49 of the United States Code to add a new Section 20157, implementation of positive train control systems. This section mandated that Class I railroad carriers and intercity passenger rail and commuter rail entities must implement PTC systems by December 31, 2015, on: (1) lines over which intercity passenger rail or commuter rail are operated; (2) main freight lines over which poison- or toxic-by-inhalation hazardous materials (TIH/PIH) are transported; and (3) such other tracks as the Secretary may prescribe by regulation or order.

As early as August 2012, the Federal Railroad Administration (FRA) reported that, “most railroads will likely not be able to complete full RSIA-required implementation of PTC by December 31, 2015.”³ FRA cited the major implementation obstacles as spectrum and radio availability, design specification availability, interoperability standards, back office server and dispatch system availability, track database verification, and installation engineering, including the limited resources that were available to railroads.⁴ In 2013, the Government Accountability Office (GAO) reported that, “most railroads report they will not complete PTC implementation by the 2015 deadline due to a number of complex and interrelated challenges,” and that

¹ *Positive Train Control*, ASSOC. OF AMERICAN RAILROADS (March 2017), <https://www.aar.org/BackgroundPapers/Positive%20Train%20Control.pdf>.

² *Id.*

³ *Positive Train Control Implementation Status, Issues, and Impacts*, Fed. Railroad Admin., <https://www.fra.dot.gov/Elib/Document/2318>.

⁴ *Id.*

“Congress should consider granting FRA the authority to extend the deadline.”⁵ Similar to the 2012 report, the GAO report outlined implementation challenges, citing the fact there are limited suppliers of the technology available to railroads and that many of the PTC components had not been developed before RSIA was enacted.⁶ Additionally, GAO cited developing system components and PTC installation, system integration and field testing, and FRA resources as major challenges.⁷

In 2015, GAO and FRA again identified the need to extend the deadline.⁸ According to the GAO report, the biggest challenges to PTC implementation were integration and field testing of PTC components, as well as FRA field testing, certification, and approval of systems and safety plans, including FRA’s available resources and timeliness.⁹ Additionally, GAO cited issues with development of a major component of the Interoperable Electronic Train Management System had been continually delayed and was one of the major obstacles to meeting the 2015 deadline.¹⁰ In FRA’s 2015 report, they also reported that there were a limited number of suppliers of PTC technology and issues remained with spectrum and radio interference.¹¹ Similarly, AAR and the American Public Transportation Association (APTA) reported that most railroads would not have had PTC fully implemented by the 2015 deadline.¹²

At the time, the potential impacts of a missed deadline were significant. In letters to Congress, freight railroads indicated that they would have to suspend shipments of TIH/PIH chemicals, and those shipments would have to have ceased well before the December 31, 2015 deadline. TIH/PIH chemicals are critical for the economy. For example, chlorine is used to purify drinking water and for manufacturing, while anhydrous ammonia is used by farmers for fertilizer. Some railroads would have had to suspend shipments of all commodities on lines requiring PTC, effectively shutting down the network.¹³ Rail service disruptions lasting only one

⁵ *POSITIVE TRAIN CONTROL Additional Authorities Could Benefit Implementation*, GOV’T ACCOUNTABILITY OFFICE, <https://www.gao.gov/assets/660/656975.pdf>.

⁶ *Id.*

⁷ *Id.*

⁸ *POSITIVE TRAIN CONTROL Additional Oversight Needed As Most Railroads Do Not Expect to Meet 2015 Implementation Deadline*, GOV’T ACCOUNTABILITY OFFICE, <https://www.gao.gov/assets/680/672320.pdf> (“In our 2013 report on PTC implementation, we suggested that Congress consider providing FRA with additional authority to extend the deadline on individual rail lines—when the need to do so can be demonstrated by the railroad and verified by FRA—on a case-by-case basis”); *Status of Positive Train Control Implementation*, FED. RAILROAD ADMIN, <https://www.fra.dot.gov/eLib/details/L16962>.

⁹ *POSITIVE TRAIN CONTROL Additional Oversight Needed As Most Railroads Do Not Expect to Meet 2015 Implementation Deadline*, GOV’T ACCOUNTABILITY OFFICE, <https://www.gao.gov/assets/680/672320.pdf>.

¹⁰ *Id.*

¹¹ *Status of Positive Train Control Implementation*, Fed. Railroad Admin, <https://www.fra.dot.gov/eLib/details/L16962>.

¹² Assoc. Am. RRs, PTC Implementation: The Railroad Industry Cannot Install PTC on the Entire Nationwide Network by the 2015 Deadline 13 (Apr. 2015); *Positive Train Control: An Assessment of PTC Implementation by Commuter Railroads*, APTA, https://www.apta.com/gap/legissues/passengerrail/Documents/APTA%20PTC%20Implementation%20progress%20report_FINAL.pdf (APTA policy supports providing the Department of Transportation with the authority to provide extensions on a case by case basis).

¹³ Letter from Carl R. Ice, President and CEO, BNSF Railway Co., to Senator John Thune, Chairman, Committee on Commerce, Science, and Transportation (Sept. 9, 2015); Letter from Luc Jobin, Executive Vice-President and Chief Financial Officer, CN, to Senator John Thune, Chairman, Committee on Commerce, Science, and Transportation (Sept. 10, 2015); Letter from Keith Creel, President and Chief Operating Officer, CP, to Senator John Thune,

month were estimated by one report to give rise to a 2.6 percentage point hit to the United States' real GDP.¹⁴ That same report noted that a shutdown would put nearly 700,000 jobs at risk.¹⁵

Similarly, in the event of a missed deadline, commuter railroads would have had to cease operations after December 31, 2015, significantly impacting commutes in major metropolitan areas (560 million trips per year).¹⁶ Additionally, Amtrak service would have been suspended. Not extending the PTC deadline would have forced more commuters onto busy roads, and stopped or diverted some TIH shipments to other modes.

In response, Congress passed the bipartisan *Surface Transportation Extension Act of 2015* (P.L. 114-73). Section 1302 was the Positive Train Control Enforcement and Implementation Act of 2015, which extended the deadline to December 31, 2018, with the option of up to 24 months of additional time. Additional time is subject to FRA review and approval if railroads meet certain implementation milestones. Government, industry, and labor were supportive of extending the deadline.¹⁷

PTC Financing

The Department of Transportation (DOT) has a number of grant programs and other financing options to assist railroads in implementing PTC. *The Fixing America's Surface Transportation Act* (FAST Act, P.L. 114-94) authorized a PTC Grant Program in the wake of the

Chairman, Committee on Commerce, Science, and Transportation (Sept. 9, 2015); Letter from Michael J. Ward, Chairman and CEO, CSX Corporation, to Senator John Thune, Chairman, Committee on Commerce, Science, and Transportation (Sept. 9, 2015); Letter from David L. Starling, President and Chief Executive Officer, Kansas City Southern, to Senator John Thune, Chairman, Committee on Commerce, Science, and Transportation (Sept. 9, 2015); Letter from James A. Squires, President and Chief Executive Officer, Norfolk Southern Corporation, to Senator John Thune, Chairman, Committee on Commerce, Science, and Transportation (Sept. 9, 2015); Letter from Lance M. Fritz, President and Chief Executive Officer, Union Pacific Corporation, to Senator John Thune, Chairman, Committee on Commerce, Science, and Transportation (Sept. 9, 2015).

¹⁴ AMERICAN CHEMISTRY COUNCIL, ASSESSMENT OF THE ECONOMIC AND SOCIAL IMPACTS OF THE FAILURE OF CONGRESS TO EXTEND THE COMPLIANCE DEADLINE FOR POSITIVE TRAIN CONTROL (PTC) (Sept. 2015).

¹⁵ *Id.*

¹⁶ *About Positive Train Control*, AMER. PUBLIC TRANS. ASSOC., http://www.apta.com/mediacenter/ptbenefits/Pages/2015_1019_Positive-Train-Control.aspx.

¹⁷ Letter from John Risch, National Legislative Director, SMART Transportation Division, and Ron Kloos, National Vice President/National Legislative Director, Transportation Communications Union/IAM, to Congress (Sept. 30, 2015) ("support [...] legislation introduced by House Transportation and Infrastructure Committee leadership [...] to extend the deadline for the implementation of Positive Train Control (PTC)."); Letter from Cal Dooley, President and CEO, American Chemistry Council, to Congressman Bill Shuster, Chairman, Committee on Transportation and Infrastructure (Oct. 5, 2015); Letter from The United States Conference of Mayors to Congressman Bill Shuster, Chairman, Committee on Transportation and Infrastructure (Oct. 5, 2015); Letter from Texas Department of Agriculture Commissioner Sid Miller to Congressman Bill Shuster, Chairman, Committee on Transportation and Infrastructure (Oct. 5, 2015); Letter from Pennsylvania State Association of Boroughs, to Congressman Bill Shuster, Chairman, Committee on Transportation and Infrastructure (Oct. 20, 2015); Joint letter from American farmers, manufacturers, retailers, energy providers, and other freight rail customers to Congressman Bill Shuster, Chairman, Committee on Transportation and Infrastructure (Oct. 23, 2015); Letter from the National Industrial Transportation League to Congressman Bill Shuster, Chairman, Committee on Transportation and Infrastructure (Oct. 1, 2015); Letter from the National Retail Federation to Congressman Bill Shuster, Chairman, Committee on Transportation and Infrastructure (Oct. 5, 2015); Letter from States for Passenger Rail Coalition to Congressman Bill Shuster, Chairman, Committee on Transportation and Infrastructure (Sept. 29, 2015); Press Release, TTD AFL-CIO, Shuster-DeFazio Offer Sensible PTC Extension Bill (Sept. 30, 2015) (on file with Committee).

PTC extension seeing the need for funds to assist railroads in implementing PTC. There is a matching cost share of 20 percent minimum of the total requested project cost. In 2017, FRA and Federal Transit Administration (FTA) had 27 total eligible projects from 16 states apply for grants, 17 projects from 13 states were selected and awarded grants which totaled the full authorization amount of \$197 million.¹⁸ In the *Consolidated Appropriations Act, 2018* (P.L. 115-141), Congress made commuter railroads eligible applicants for the \$250 million set-aside in the Consolidated Rail Infrastructure and Safety Improvements (CRISI) program for PTC system implementation. In August 2018, FRA awarded \$203 million in grant funding for 28 projects in 15 states to assist with the deployment of PTC systems. In addition, FRA expects to issue a Notice of Funding Opportunity (NOFO) soliciting applications for PTC systems deployment projects based on the balance of the remaining \$46.3 million.

In total, FRA and FTA have awarded more than \$1 billion in grant funding to railroads to assist in implementation of PTC. Sources of grant funding are:

- \$475 million from FRA's High-Speed Intercity Passenger Rail (HSIPR) Grant Program;
- \$203 million from FRA's Consolidated Rail Infrastructure and Safety Improvements (CRISI) program;
- \$197 million in FAST Act PTC Grant funding;
- \$142 million in annual capital grant funding to Amtrak (as of August 2018);
- \$86 million from FRA's Railroad Safety Technology Grant Program;
- \$52 million in American Recovery and Reinvestment Act grant funding to Amtrak; and
- \$2 million in Research and Development grants.¹⁹

In addition to grants, the Railroad Rehabilitation and Improvement Financing (RRIF) program and the Transportation Infrastructure Finance and Innovation Act (TIFIA) program are available for financing PTC implementation. Indeed, the FAST Act specifically prioritized PTC installation projects for RRIF funding. In May 2015, FRA issued a \$967.1 million loan to Metropolitan Transportation Authority (MTA) for Long Island Rail Road's (LIRR) and Metro-North Railroad's PTC implementation.²⁰ On December 8, 2017, the Build America Bureau closed a \$162 million TIFIA loan and a \$220 million RRIF loan to the Massachusetts Bay Transportation Authority (MBTA) for PTC system implementation.²¹

PTC Mandate Progress

As of June 30, 2018, the freight industry has made substantial progress in implementing PTC since the extension was passed in 2015. According to FRA, 99 percent of all radio towers have been installed; 93 percent of locomotives have been equipped and are operational; 66 percent of route miles are in PTC operation; 97 percent of employee training is completed; and 86 percent of track segments are completed.²²

¹⁸ *Id.*

¹⁹ Federal Railroad Administration Briefing with House Committee on Transportation and Infrastructure on Positive Train Control (on file with Committee).

²⁰ *Id.*

²¹ *Id.*

²² *PTC IMPLEMENTATION STATUS BY FREIGHT AND PASSENGER RAIL*, Fed. Railroad Admin., <https://www.fra.dot.gov/app/ptcsummary/>.

As of June 30, 2018, the passenger and commuter rail industry has made progress towards implementing PTC, with some entities making greater strides than others. Overall, 91 percent of radio towers are installed; 73 percent of locomotives are equipped and PTC operable; 24 percent of route miles are in PTC operation; 77 percent of employees are trained; and 48 percent of track segments are complete.²³

Based on railroads' self-reporting data from their Quarterly PTC Progress Reports for Quarter 2 of 2018, FRA currently considers nine railroads at risk of not meeting the statutory criteria required to qualify for an alternative schedule. FRA currently considers any railroad that installed less than 90 percent of its PTC system hardware as of June 30, 2018, to be at risk, as installation of all PTC system hardware is only an initial phase of implementing a PTC system and only one of the six statutory criteria required to qualify for an alternative schedule.

The nine at-risk railroads are: New Mexico Rail Runner Express (Rio Metro), Capital Metropolitan Transportation Authority, New Jersey Transit, Altamont Corridor Express, Maryland Area Regional Commuter, Trinity Railway Express, South Florida Regional Transportation Authority, Peninsula Corridor Joint Powers Board (Caltrain) and Central Florida Rail Corridor (SunRail).

²³ *Id.*

WITNESS LIST

The Honorable Ronald L. Batory
Administrator
Federal Railroad Administration

The Honorable Robert Sumwalt
Chairman
National Transportation Safety Board

Ms. Susan A. Fleming
Director, Physical Infrastructure Team
Government Accountability Office

Mr. Scot Naparstek
Executive Vice President and Chief Operating Officer
Amtrak

The Honorable Edward Hamberger
President and Chief Executive Officer
Association of American Railroads

Mr. Jeffrey D. Knuettel, P.E.
General Manager
Southeastern Pennsylvania Transportation Authority
On behalf of American Public Transportation Association

Ms. Stacey Mortensen
Executive Director
Altamont Corridor Express

THE STATE OF POSITIVE TRAIN CONTROL IMPLEMENTATION IN THE UNITED STATES

THURSDAY, SEPTEMBER 13, 2018

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON RAILROADS, PIPELINES, AND
HAZARDOUS MATERIALS,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:06 a.m. in room 2167, Rayburn House Office Building, Hon. Jeff Denham (Chairman of the subcommittee) presiding.

Mr. DENHAM. The subcommittee will come to order.

Without objection, the Chair is authorized to declare a recess at any time. We expect a very lengthy hearing today, but we also know that there are several other committees meeting, as well as floor votes today.

Our hearing today focuses on the implementation of Positive Train Control, PTC, in the United States. It is an especially important hearing, as yesterday marked the 10th anniversary of the tragic Chatsworth accident.

This important life-saving technology is one of the most complex safety mandates ever undertaken by the railroad industry. PTC is a radio- or GPS-based system designed to prevent train-to-train collisions, over speed derailments, incursions into work zones, and the movement of a train through a switch left in the wrong position.

From its inception a decade ago, Congress and stakeholders anticipated that the PTC mandate would be a daunting undertaking. It has never been implemented on such a large scale, and has never required such a high level of interoperability.

Since the 2008 mandate was enacted and the 2015 bipartisan extension was passed, freight, passenger, and commuter railroads have been working to implement PTC. We have seen a great deal of progress, from freight rails as well as commuter rails across the entire country, but we have still seen challenges. We have still seen accidents. We have had promises made to us, as a committee, that haven't been met.

And we held a hearing earlier this year. He and I have been very united on this topic. And we ask the entire industry, if there is something you need, let us know. If it is funding, if it is a technical rule, whatever the issue is, because we have got a very, very large country with very unique circumstances and different rails across the entire country in different positions, as far as implementation. We have consulted several times to ask each other what have the

rails come up with. Has anybody asked for extensions? Is anybody asking for money or grants?

And so, as you will see in this committee hearing, I would expect the patience is growing thin on actual PTC implementation. That is why we called this, to hear from all of you. So it is a critical issue for our country, especially as we have continued to see some accidents, for a variety of different reasons. But most of which would be solved if we had PTC in place.

With that, I yield to the ranking member, Mr. Capuano.

Mr. CAPUANO. I agree with everything the chairman just said, 100 percent.

I also want to state that, from what I see, there has been a lot of progress made. So I want to be clear about that. From what—the way I look at it, there is a few people who are lagging behind, which actually, I think, proves the point that there is no reason to be lagging behind, because most everybody is doing their job.

So I just want to be real clear: for those who are doing their job, thank you, I appreciate it. A long time coming, and it is finally happening.

For those of you who are not, understand it is going to be very difficult to make an argument that for some reason everybody else could do it except you. It is going to be almost impossible, as far as I am concerned.

And I do say again that when that time comes, there will be nobody to point a finger at any more. There will be no more bottom lines on whether it was worth the money to not do PTC and possibly risk lives or property. Those days are over.

And again, most of you get it, and I want to be real clear. Because of that, I—we get upset on occasion, but I also want to be real clear. Most companies have done it. Most public entities have done it, or are on the way to doing it. The handful who are not, I am just saying very clearly, be careful, because I don't think you are going to find very many, if any, open minds on this side of the table when you come to say, for some reason, every other person except us could get their job done, particularly at this late date.

With that, I am going to yield back.

Mr. DENHAM. I now recognize the full committee chairman, Mr. Shuster.

Mr. SHUSTER. Thank you, Chairman Denham. Thanks for holding this hearing. And I just want to echo the concerns that the chairman and the ranking member have about PTC.

I would like to point out, though, further, we are talking about who is doing, who is not doing. And I want to say I know my reports that I have seen is the freight rails are all in position to deploy, and it is the commuter rails and the other smaller entities out there that seem to be holding this up.

And, as the chairman said, there have been concerns, we have reached out, asked what the needs are, and time and time again it has either been—not got a response back, or everything is OK. And, as I said, it is concerning when we, in 2015, we unanimously voted to extend it, we did it because we thought that everybody would step up their game and get to a point that we would see PTC being deployed.

So again, it is—as the ranking member said, it is not everybody. What I have seen, again—I will emphasize the freight rails seem to be doing what they are supposed to be doing, and need to move forward. And that interoperability is the piece that doesn't seem to be there, that doesn't—they can't do what they need to do to fully implement the PTC.

So again, this hearing is important. Safety is absolutely critical to this committee when it comes to all modes of transportation. So I look forward to hearing everybody's testimony today.

Thank you, Mr. Chairman. I yield back.

Mr. DENHAM. I now recognize Mr. DeFazio for any statement he may have.

Mr. DEFazio. Thanks, Mr. Chairman. Thanks for holding this important hearing.

Yes, I hope, like the speakers before me, to hear about how we are going to meet the statutory deadlines of 2018 and full utilization by 2020.

You know, I am concerned at some of those at the rear of the pack. As Ranking Member Capuano mentioned, there is no feasible excuse that isn't, you know, for this committee, or for the agency.

I am concerned. Ranking Member Capuano, Congressman Cohen, and Congressman Cooper and I sent a letter to the FRA after they exempted the Music City Star a permanent exemption from PTC, you know, and I understand there is another railroad that is pending. I hope to hear from Administrator Batory on this.

You know, Congress did not authorize exemptions to PTC. I find that nowhere in the law. And you know, this causes me concern that some will look at this, look at the exemption, the one granted and the one potentially in process, and say, "Well, there is our out, you know, we are way behind schedule here."

So, you know, this is not something that Congress anticipated. And, you know, I look forward to hearing how FRA might revise the process in the future.

Thank you, Mr. Chairman.

Mr. DENHAM. Thank you, Mr. DeFazio.

I would like to welcome each of our witnesses here today. Our panel is comprised of the Honorable Ron Batory, Administrator of the Federal Railroad Administration, FRA; the Honorable Robert Sumwalt, Chairman, National Transportation Safety Board, NTSB; Susan Fleming, Director of Physical Infrastructure, Government Accountability Office; Scot Naparstek, executive vice president and COO of Amtrak; Ed Hamberger, president and CEO of the Association of American Railroads; Jeff Knueppel, general manager, Southeastern Pennsylvania Transportation Authority, on behalf of the American Public Transportation Association; and Stacey Mortensen, executive director of the San Joaquin Regional Rail Commission.

I ask unanimous consent that our witnesses' full statements be included in the record.

Without objection, so ordered.

Since your written statement has been made part of the record, the subcommittee would request that you limit your testimony to 5 minutes.

Mr. Batory, you are recognized.

TESTIMONY OF HON. RONALD L. BATORY, ADMINISTRATOR, FEDERAL RAILROAD ADMINISTRATION; HON. ROBERT L. SUMWALT III, CHAIRMAN, NATIONAL TRANSPORTATION SAFETY BOARD; SUSAN A. FLEMING, DIRECTOR, PHYSICAL INFRASTRUCTURE, U.S. GOVERNMENT ACCOUNTABILITY OFFICE; SCOT NAPARSTEK, CHIEF OPERATING OFFICER, AMTRAK; EDWARD R. HAMBERGER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, ASSOCIATION OF AMERICAN RAILROADS; JEFFREY D. KNUEPPEL, P.E., GENERAL MANAGER, SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY, ON BEHALF OF THE AMERICAN PUBLIC TRANSPORTATION ASSOCIATION; AND STACEY MORTENSEN, EXECUTIVE DIRECTOR, SAN JOAQUIN REGIONAL RAIL COMMISSION

Mr. BATORY. Thank you, Chairman Denham, Chairman Shuster, Ranking Member Capuano, Ranking Member DeFazio, and members of the subcommittee. Thank you for the opportunity to testify today to discuss Positive Train Control, better known as PTC.

I come to my position as Administrator of the Federal Railroad Administration with 45 years of experience in the railroad industry. Through my career I have continually focused on improving safety performance, and I bring this same commitment to the FRA.

Secretary Chao and myself have made railroads' implementation of PTC the top of FRA's agenda. Forty-one railroads are required to implement PTC systems, and that includes all 7 Class I freight railroads, 30 commuter and intercity passenger railroads, including Amtrak, and 4 short line and terminal switching railroads. This technology is required to be implemented on approximately 58,000 miles of the 140,000-mile rail network.

While railroads are making progress, FRA expects that most railroads will need to request an alternative schedule to complete testing, obtain system certification, and meet interoperability requirements.

This summer, for the first time in agency history, the FRA hosted three symposia for the to-be-compliant railroads. Each of the day-long sessions brought together railroad safety officials and FRA's PTC experts to ensure that each railroad subject to the mandate is aware of its obligations and is equipped to meet the deadline. These meetings discussed industry questions and lessons learned, requirements for the December 31, 2018, deadline, along with best practices for testing and safety plans.

Since April 2016, FRA has tracked individual railroads' self-reporting implementation. Based on the railroads' most recent reports, PTC systems are in operation on 66 percent of the freight railroads' required route mileage. Passenger railroads have made less progress, with PTC systems in operation on 24 percent of what is required.

The most recent data also showed a reduction in the number of railroads FRA considers to be at risk of not qualifying for an alternative schedule, from 12 railroads in April of 2018 to 9 in August of this year. FRA currently considers any railroad that has installed less than 90 percent of its system hardware as of June 30th to be most at risk of failing to qualify for an alternative schedule. It is important to note that the installation of all PTC system hard-

ware is only one of six criteria required to qualify for an alternative schedule to complete full PTC system implementation after December 31, 2018.

The nine at-risk railroads are the New Mexico Rail Runner, CapMetro, New Jersey Transit, Altamont Corridor Express, MARC, Trinity Railway Express, Tri-Rail, Caltrain, and SunRail. FRA is in frequent communication and providing additional onsite technical assistance to further assist these railroads.

Over the next several months FRA expects to receive and review requests for railroads' alternative schedules beyond the December 31, 2018, deadline. By law, FRA has 90 days to review and issue a decision to approve or deny the alternative schedule. FRA expects to receive many of the requests before the end of the year, and will review the extension request in January through March of 2019. If a railroad fails to qualify and receive FRA approval for an alternative schedule, FRA is authorized to assess monetary penalties.

PTC is designed to provide important risk reduction protocols to enhance existing safety, but these systems come with significant costs. Since 2008, FRA has awarded \$961 million in grant funding to support railroads' implementation. More recently, on August 24th of this year, FRA selected 28 PTC projects, including 13 commuter railroads, to receive \$203 million under the Consolidated Rail Infrastructure and Safety Improvement grant program. Of the \$203 million announced, \$80 million in grants, or 39 percent, was announced for at-risk railroads. Since 2008, a total of \$2.5 billion in grants and loans has been allocated to the railroads to assist with PTC implementation.

In an effort to show FRA's continued commitment to PTC implementation, we reissued a notice of funding opportunity for the remaining \$46 million in grants. Similar to the previous issued NOFO, this is an expedited solicitation with a 30-day application period. Applications will be due October 12th.

Looking forward to the rest of this year and into 2019, FRA will continue to support and facilitate railroads' implementation of PTC by utilizing the tools afforded by Congress, and providing extensive technical assistance.

I appreciate the committee's support for our programs, and look forward to your safety-oriented questions.

[Mr. Batory's prepared statement follows:]

Prepared Statement of Hon. Ronald L. Batory, Administrator, Federal Railroad Administration

Chairman Denham, Ranking Member Capuano, and members of the subcommittee:

Thank you for the opportunity to testify today to discuss positive train control (PTC). I come to my position as Administrator of the Federal Railroad Administration (FRA) with 45 years of experience in the railroad industry, rising to become the President and Chief Operating Officer of a significant freight rail carrier in the United States. Throughout my career, I have been focused on continually improving safety performance, and I bring this same commitment to my current position as Administrator of the FRA.

As we approach critical deadlines for railroads' implementation of PTC systems, myself, and the men and women that serve at FRA remain committed to working with the railroads and its supply industry to ensure the full implementation of this important rail-safety technology in a timely manner.

PTC MANDATE

Railroads' implementation of PTC systems has been, and remains, at the top of our agenda. PTC systems represent the most fundamental change in rail safety technology since the introduction of Automatic Train Control in the 1920's. As mandated by the Rail Safety Improvement Act of 2008 (RSIA), each Class I railroad and entity providing regularly scheduled intercity or commuter rail passenger service must implement an FRA-certified PTC system on (1) its main lines over which 5 million or more gross tons of annual traffic are transported if the main line carries poison-or toxic-by-inhalation hazardous materials, and (2) its main lines over which intercity or commuter rail passenger transportation is regularly provided. Under RSIA, railroads were originally required to complete implementation by December 31, 2015. Approximately 2 months before that deadline, the House and Senate overwhelmingly passed, and the President signed, the Positive Train Control Enforcement and Implementation Act of 2015 (PTCEI Act), extending the deadline for full PTC system implementation to December 31, 2018.

In addition, under the PTCEI Act, Congress permits a railroad to request FRA's approval of an "alternative schedule" with a deadline extending beyond December 31, 2018, but no later than December 31, 2020, for full PTC system implementation. The law requires FRA to approve a railroad's alternative schedule with a deadline that is as soon as practicable, but not later than December 31, 2020, if a railroad submits a written request to FRA that demonstrates it has met the statutory criteria to qualify for such an alternative schedule. Currently, 41 railroads are required by statute to implement PTC systems: all 7 Class I freight railroads; 30 commuter and intercity passenger railroads, including the National Railroad Passenger Corporation (Amtrak); and 4 short line and terminal railroads. The technology is required to be implemented on approximately 58,000 route miles of the 140,000-mile railroad network.

While railroads are making progress, FRA expects that most railroads will need to request an alternative schedule to complete testing, obtain PTC System Certification, meet the statutory interoperability requirements, and fully implement PTC systems on all main lines required to be governed by PTC systems. FRA continues to take a proactive approach to help railroads acquire, install, test, and fully implement certified PTC systems as soon as possible.

At the direction of Secretary Elaine L. Chao, FRA senior leadership met individually with executives from each of the 41 railroads in January and February of this year. In May and June, we also held followup meetings with the 12 railroads identified as at risk, as of Quarter 1 of 2018, of not meeting the statutory criteria necessary to qualify for FRA's approval of an alternative schedule. Railroads have generally been candid in detailing the challenges and obstacles confronting their properties. During the meetings, we sought to objectively evaluate each railroad's PTC deployment status, and learn what remaining steps each railroad needs to take to meet the deadline or satisfy the statutory criteria necessary to qualify for an alternative schedule.

During these meetings and throughout our conversations with the railroads, they commonly conveyed the following ongoing challenges:

- There is a competitive yet limited number of PTC system vendors and suppliers. Unusually weighted demand and supply has constrained the timely serving of all 41 railroads and their tenant railroads;
- As reliability and stability of PTC systems is still immature, railroads are experiencing significant technical issues with both PTC system hardware and PTC system software that often take considerable time to diagnose and resolve, impacting current operations;
- Host railroads (totaling 36) noted that many tenant railroads (estimated at 250+) that operate on main lines requiring PTC system implementation have made variable, and often unknown, progress equipping locomotives with operational PTC technology, while some tenant railroads report that their host railroads are not providing opportunity for testing. FRA is initiating efforts to synchronize the coordination among the host and tenant railroads;
- Railroads have only recently begun testing PTC systems for interoperability;
- Many commuter railroads stated that negotiating legal agreements with certain vendors and suppliers often took time to complete, given various insurance, liability, and State law issues;
- Absence of consistent leadership at several railroads, regardless of leadership quality, weakened the "sense of urgency" and the focus on PTC system implementation at some entities subject to the statutory mandate; and
- Railroads noted concern about FRA's review and approval cycle, given the surge in submissions requiring FRA approval in 2018–2020.

By law, it is the railroads' responsibility to implement PTC systems, but FRA is facilitating railroad and supplier collaboration to hasten, and urge, implementation. We have also met individually with PTC system component suppliers to learn more about their capacity to meet the high demand of railroads to achieve timely implementation.

This summer FRA hosted three PTC symposia for the 41 railroads mandated to implement PTC systems. Each of the day-long sessions brought together railroad safety officials and FRA's PTC experts to ensure that each and every railroad subject to the mandate is aware of its obligations and is equipped to meet the congressionally mandated deadline. The first symposium discussed industry questions and focused on requirements for the December 31, 2018, statutory deadline.

The second focused on best practices for testing PTC systems on the general rail system, including field testing, revenue service demonstration (RSD), and interoperability testing. The third focused on lessons learned and best practices for PTC Safety Plans, which are required for host railroads to obtain PTC System Certification and achieve full system implementation. As FRA tracks railroads' progress, additional symposia on PTC may be offered, as new challenges arise.

PTC STATUS UPDATE

Since April 1, 2016, FRA has been closely tracking and displaying on its website individual railroads' self-reported PTC system implementation status. FRA's PTC Dashboard tracks railroads' progress toward full implementation on a quarterly basis, including the number and percentage of locomotives equipped and PTC operable, track segments completed, radio towers installed, training completed, spectrum acquisition, route miles in RSD, whether the railroad has obtained PTC System Certification, route miles in PTC operation, and more recently, interoperability between host railroads and tenant railroads. In addition, FRA tracks, on a quarterly basis, the progress each railroad has made toward meeting the statutory criteria necessary to qualify for FRA's approval of an alternative schedule.

Based on railroads' most recent Quarter 2 reports (with data current as of June 30, 2018), PTC systems are in operation on 35,487 route miles, which is approximately 66 percent of the freight railroads' route miles that are required to be governed by a PTC system. Passenger railroads have made less progress, with PTC systems in operation on 975 route miles, which is approximately 24 percent of the required route miles. Notably, PTC systems are being operated in RSD on an additional 1,103 freight railroad route miles and an additional 140 commuter railroad route miles, as of Quarter 2. Fifteen railroads report they have completed installation of all hardware necessary for PTC system implementation, and 12 other railroads have installed between 95 and 99 percent of the PTC system hardware identified in their PTC Implementation Plans, as of June 30, 2018. All but one railroad, whose PTC systems use spectrum, reported they have acquired sufficient spectrum. In addition, 14 railroads have initiated sufficient RSD or met substitute criteria, which is also one of the six statutory criteria needed to qualify for an alternative schedule.

The most recent data also showed a reduction in the number of railroads at risk of not qualifying for an alternative schedule, from 12 railroads as of Quarter 1 of 2018, to nine railroads as Quarter 2. FRA currently considers any railroad that had installed less than 90 percent of its PTC system hardware as of June 30, 2018, to be most at risk of failing to qualify for an alternative schedule. Installation of all PTC system hardware is only an initial phase of implementing a PTC system and only one of the six statutory criteria required to qualify for an alternative schedule to complete full PTC system implementation after December 31, 2018. The nine at-risk railroads are: New Mexico Rail Runner Express (Rio Metro), Capital Metropolitan Transportation Authority (CapMetro), New Jersey Transit (NJT), Altamont Corridor Express (ACE), Maryland Area Regional Commuter (MARC), Trinity Railway Express (TRE), South Florida Regional Transportation Authority (Tri-Rail), Peninsula Corridor Joint Powers Board (Caltrain) and Central Florida Rail Corridor (SunRail).

In addition to the letters of concern from April and June 2018, on August 24th, I sent letters to the nine railroads that FRA remains concerned are at risk of both missing the statutory implementation deadline, and failing to qualify for an alternative schedule. This assessment was based on railroads' self-reported progress as of June 30, 2018 (Quarterly PTC Progress Reports for Quarter 2 of 2018). I also sent similar letters expressing concern to the relevant State departments of transportation and Governors. FRA is working closely with all 41 railroads subject to the PTC mandate; for the nine at-risk railroads, FRA is actively engaging in frequent communication and providing additional onsite technical assistance. Of course, all

railroads subject to the mandate must pay careful attention to the requirements for an alternative schedule if they will not achieve full PTC system implementation by December 31, 2018, and must continue vigilantly working toward prompt PTC system implementation.

GRANT FUNDING AND FINANCIAL ASSISTANCE

PTC technology is designed to provide important safety improvements, but these systems come with significant costs, both in terms of immediate acquisition and increased operations and maintenance costs. Industry estimates PTC acquisition will exceed \$14 billion, and maintenance will cost 10 to 20 percent of annual capital costs. Since 2008, FRA has awarded approximately \$961 million in grant funding to support railroads' implementation of PTC systems. FRA also supported the Federal Transit Administration (FTA) with its evaluation and selection of approximately \$197 million in grant funding awarded to 17 commuter and intercity passenger railroads and State and local governments for installation of PTC systems, which were announced on May 31, 2017. More recently, on August 24, FRA selected 28 PTC projects, including 13 commuter rail projects not usually eligible for FRA funding, to receive \$203.7 million under the Fiscal Year 2018 Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant program. Given that applications for this funding were due July 2, I would note that FRA worked tremendously hard to evaluate the applications and make selections. Our hard work allowed us to make the grant announcements 2 months after receipt of the applications. This process can typically take up to 6 months or longer to complete.

Currently, FRA has two open funding opportunities that can further aid railroads, States, and other stakeholders with implementing PTC as well as other important safety and infrastructure needs: \$318.4 million under the broader Fiscal Year 2018 CRISI program, and \$46.3 million for the remaining funding under the PTC-specific Fiscal Year 2018 CRISI program. And finally, FRA is evaluating applications submitted under the \$65.2 million Fiscal Year 2017 CRISI and \$4.8 million Fiscal Year 2017 Restoration & Enhancements grant programs, and will be making selection announcements in the near future.

In total, the sources of the approximately \$1.16 billion in FRA and FTA grant funding for PTC are:

- \$475 million from FRA's High-Speed Intercity Passenger Rail Grant Program;
- \$197 million in Section 3028 of the Fixing America's Surface Transportation Act (FAST Act) funding;
- \$204 million in CRISI grant funding;
- \$0.3 million in a Special Transportation Circumstances Grant;
- \$142 million in annual capital grant funding to Amtrak;
- \$86 million from FRA's Railroad Safety Technology Grant Program;
- \$52 million in American Recovery and Reinvestment Act grant funding to Amtrak; and
- \$2 million in Research and Development grants.

Additionally, in May 2015, FRA issued a \$967.1 million loan to Metropolitan Transportation Authority for Long Island Rail Road's and Metro-North Railroad's implementation of PTC systems. And on December 8, 2017, the Build America Bureau closed on a \$162 million Transportation and Infrastructure Finance and Innovation Act loan and a \$220 million Railroad Rehabilitation and Improvement Financing loan to be issued to the Massachusetts Bay Transportation Authority for PTC system implementation.

In sum, thanks to the funding provided by Congress, the Department has made available over \$2.5 billion in grants and loans since 2008. This amounts to nearly 20 percent of industry estimates for PTC implementation costs.

ENFORCEMENT OF THE PTC IMPLEMENTATION MANDATE

FRA is committed to helping ensure that railroads implement PTC systems as safely and expeditiously as possible, in accordance with the congressional mandate. FRA is authorized to assess monetary civil penalties against any railroad that fails to implement a PTC system by the applicable statutory deadline (either December 31, 2018, or, if a railroad has an approved alternative schedule, the applicable date not later than December 31, 2020). FRA's civil penalty schedule recommends, as guidance, a \$16,000 civil penalty for a failure to timely complete PTC implementation on a track segment where it is required. For any violation of a Federal rail safety statute, regulation, or order, however, the current statutory minimum civil penalty FRA may assess is \$853, and the ordinary statutory maximum is \$27,904. FRA may assess a civil penalty for each day the noncompliance continues, but FRA may elect to take enforcement action on a one-time basis or each month, quarter, year,

or other interval of time during which the noncompliance continues. FRA is currently considering all options, within the framework established by law, to determine what type of enforcement action will be most effective and appropriate under the circumstances. Our goal is to ensure any enforcement action compels a railroad to fully implement its PTC system as efficiently and safely as possible.

Also, I would like to note that in June and July 2018, FRA initiated enforcement action against each of the 13 railroads that failed to complete one or more of the end-of-2017 hardware installation milestones and/or spectrum acquisition milestones the railroad established in its PTC Implementation Plan. Consistent with FRA's commitment to ensuring railroads comply with the statutory mandate, including interim requirements, FRA's Notice of Probable Violation to each of the 13 railroads proposed the maximum civil penalty for this type of interim violation—i.e., a one-time civil penalty of \$27,904.

Since this Administration took office, railroads have made significant progress toward installing and implementing PTC systems. From Quarter 1 of 2017 to Quarter 2 of 2018, railroads increased the total amount of installed PTC system hardware from 77 percent to 97 percent. As of June 30, 2018, PTC systems are either in RSD or in operation on approximately 37,705 route miles (i.e., 65 percent) of the nearly 58,000 route miles that are subject to the statutory mandate.

Moving forward, FRA will continue to support and facilitate railroads' implementation of PTC technology by utilizing the tools afforded by Congress and providing extensive technical assistance and guidance to railroads and suppliers. We remain vigilant in harnessing and leveraging all the personnel, financial, and other resources available to help expedite railroads' implementation efforts. We appreciate the subcommittee's support for our critical programs, and we welcome your continued partnership to advance rail safety and service. I look forward to your questions.

Mr. DENHAM. Thank you.

Mr. SUMWALT?

Mr. SUMWALT. Good morning, Chairman Shuster, Chairman Denham, Ranking Member DeFazio, Ranking Member Capuano, and members of the subcommittee.

As Chairman Denham indicated, yesterday marked the 10-year anniversary of the tragedy at Chatsworth. That accident killed 25 people, injured over 100, many with life-altering injuries. And, of course, in the aftermath of that accident, Congress mandated PTC through the Rail Safety Improvement Act of 2008.

Now, here we are, 10 years later, and nearly 3 years after the original deadline mandated by Congress. And we still do not have PTC fully implemented in the United States. Is that acceptable? It is certainly not acceptable to the NTSB.

Since Chatsworth, we have investigated 22 accidents that could have been prevented by PTC, and these accidents resulted in 29 deaths, over 500 injuries, and property costs in excess of \$190 million.

The NTSB strongly urges swift implementation of the congressional PTC mandate.

That said, it is important to note that even after that mandate is met, significant portions of the Nation's rail network will not have PTC. According to reports submitted by the railroads to FRA, only about 40 percent of the Nation's rail network will have PTC.

And of significant concern as it relates to Amtrak, there are over 1,400 miles of mainline track that Amtrak currently operates on that will not have PTC. And if Amtrak continues to operate on those segments, there will be a diminished level of safety for those passengers and train crews who are traveling through communities such as Topeka, Kansas; Grand Junction, Colorado; Portland, Maine; Memphis, Tennessee; New Orleans; St. Louis; and many others.

In other cases, under its regulations, the FRA has approved exemptions to the PTC requirement for other mainline tracks on which not only freight, but also intercity passenger and commuter railroads operate. Again, this means there will be a significant diminished level of safety for passengers traveling on those railroads.

Earlier this year, an Amtrak passenger train collided with a standing CSX freight train in Cayce, South Carolina. An operational PTC system could have prevented that accident. This is the second accident that we have investigated involving a train being unexpectedly diverted onto a side track because of a switch being left in the wrong position in an area of track under signal suspension due to installation and testing of PTC.

When I testified before this committee in February, in the aftermath of that Cayce accident, I told you about an urgent safety recommendation that we had issued that day which called on the FRA to order railroads to implement operational measures needed to ensure safety operation in areas where PTC is being installed and tested.

Now, I want to point out that we only issue urgent safety recommendations when we determine that the course of action requires immediate attention to avoid imminent loss. And here we are, 7 months later, and the FRA has not issued such an order, and the recommendation is currently classified by the NTSB as “Open-Unacceptable Response.” And I think that the classification of that recommendation in an unacceptable status speaks for itself. We are concerned with the lack of action by the FRA.

The NTSB is also concerned that 10 years after Chatsworth most railroads are still not ready. And let me spell that out: for every day that we go without PTC, we are at risk for another Chatsworth; another Bronx; another Amtrak in Philadelphia; another DuPont; another Cayce, South Carolina. Each of these were mass casualty events due to human error, accidents that could have been prevented by PTC.

And I thank you for the opportunity to testify today. Thank you for holding this hearing. And I look forward to your questions.

[Mr. Sumwalt’s prepared statement follows:]

Prepared Statement of Hon. Robert L. Sumwalt III, Chairman, National Transportation Safety Board

Good morning, Chairman Denham, Ranking Member Capuano, and members of the subcommittee. Thank you for inviting the National Transportation Safety Board (NTSB) to testify before you today.

The NTSB is an independent Federal agency charged by Congress with investigating every civil aviation accident and significant incidents in the United States, as well as significant accidents and incidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of these accidents and other transportation events and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the Federal Government and other organizations to assist victims and their family members who have been impacted by major transportation disasters.

On November 14, 2016, we announced our Most Wanted List of Transportation Safety Improvements for 2017–2018.¹ This list, based on safety issues we have identified in our investigations, highlights the 10 areas in transportation safety where

¹ NTSB, 2017–2018 Most Wanted List (Washington, DC: NTSB, 2016).

we believe improvements are most critical. One issue area on this cycle's Most Wanted List is "Increase Implementation of Collision Avoidance Technologies," which addresses the need for positive train control (PTC) to reduce accidents, prevent injuries, and save lives.

THE STATE OF POSITIVE TRAIN CONTROL IMPLEMENTATION

Yesterday marked the 10-year anniversary of the tragic accident in Chatsworth, California, in which a Metrolink commuter train and a Union Pacific freight train collided head-on, killing 25 people and injuring 102 others.² Our investigation concluded that the Metrolink engineer's use of a personal electronic device to send text messages distracted him from his duties and that positive train control (PTC) could have prevented this accident. In the aftermath of that tragedy and a number of others that the NTSB investigated, Congress passed the Rail Safety Improvement Act of 2008 (RSIA), which required the implementation of a PTC system on each line over which intercity passenger or commuter service is operated or over which poison-or toxic-by-inhalation hazardous materials were transported, by December 31, 2015.³ In October 2015, Congress extended this deadline to December 31, 2018, and included provisions for railroads to request an additional 24-month extension to December 31, 2020, if certain criteria are met.⁴

Now, 10 years later and nearly 3 years after the original deadline imposed by Congress, PTC is still not fully implemented in the United States. The NTSB strongly urges swift implementation of the congressional PTC mandate. However, it is important to note that even after that mandate is met, significant portions of the rail network will not have PTC. According to reports from railroads to the Federal Railroad Administration (FRA), only about 40 percent of the rail network—or 58,000 of 134,000 route miles—will have PTC. Significantly, Amtrak will have over 1,400 miles of track it currently operates on that will not have PTC. If Amtrak continues to operate on these segments, there will be a diminished level of safety for passengers and train crews traveling communities such as Topeka, Kansas; Grand Junction, Colorado; Portland, Maine; Memphis, Tennessee; New Orleans; St. Louis; and many others.

In other cases, under its regulations, the FRA has approved exceptions to the PTC requirement for other main line tracks on which not only freight, but also other intercity passenger and commuter railroads operate. Again, this means that there will be a significantly decreased level of safety for those passengers and train crews that are traveling on those railroads.

NTSB INVESTIGATIONS OF PTC-RELATED ACCIDENTS

Since the enactment of RSIA, there have been 22 accidents we have investigated or are currently investigating that could have been prevented by PTC. These accidents resulted in 29 deaths, over 500 injuries, and over \$190 million in property damage. These include:

- In September 2010, near Two Harbors, Minnesota, human error and fatigue contributed to the collision of two freight trains. Five crewmembers were injured.
- In May 2011, in Hoboken, New Jersey, human error contributed to the collision of a train with the bumping post at the end of the track.
- In June 2012, near Goodwell, Oklahoma, human inattentiveness contributed to the collision of two freight trains. Three crewmembers were killed.
- In May 2013, near Chaffee, Missouri, inattentiveness and fatigue contributed to the collision of two freight trains. Two crewmembers were injured and a highway bridge collapsed.
- In December 2013, in the Bronx, New York, fatigue contributed to the derailment of a passenger train. Four passengers were killed and 61 others were injured.
- In May 2015, in Philadelphia, Pennsylvania, an Amtrak engineer's acceleration to 106 miles per hour (mph) as he entered a curve with a 50 mph speed restriction, due to his loss of situational awareness, led to a derailment. Eight passengers were killed and 185 others were injured.

Two accidents currently under investigation occurred in DuPont, Washington and Cayce, South Carolina. Each of these accidents happened on tracks that were unpro-

² NTSB, Collision of Metrolink Train 111 With Union Pacific Train LOF65-12 Chatsworth, California September 12, 2008, Rpt. No. NTSB/RAR-10/01 (January 21, 2010).

³ Rail Safety Improvement Act of 2008, Pub. L. No. 110-432, § 104 (October 16, 2008).

⁴ Positive Train Control Enforcement and Implementation Act of 2015, Pub. L. No. 114-73, § 1302 (October 29, 2015).

tected by PTC. While we are still investigating both, they are each a type of accident that a fully operational PTC system is designed to prevent—overspeeds and misaligned switches.

Amtrak 501 Derailment—DuPont, Washington

On the morning of December 18, 2017, on its first regular passenger service trip, Amtrak passenger train 501 derailed as it traversed a curve near DuPont, Washington. The lead locomotive, the power car, and two passenger railcars derailed from an overpass onto Interstate 5. At the time of the accident, 77 passengers, 5 Amtrak employees, and a technician from the railcar manufacturer, Talgo Incorporated, were on the train. Of these individuals, 3 passengers were killed and 62 passengers and crewmembers were injured. Eight individuals in highway vehicles were also injured. Our investigation is ongoing, but on January 4, 2018, we issued a preliminary report regarding this derailment.⁵

Central Puget Sound Regional Transit Authority (Sound Transit), a public transit agency in the State of Washington, owns the Point Defiance Bypass tracks where the derailment occurred. Sound Transit reported that the PTC system on this line was not operational at the time of the accident. The authorized track speed decreases from 79 mph to 30 mph as the track approaches the curve. According to the lead locomotive’s event data recorder, the final recorded speed of the locomotive was 78 mph. In this accident, PTC would have notified the train engineer about the speed reduction for the curve, and if he did not take appropriate action to control the train’s speed, PTC would have applied the train brakes to maintain compliance with the speed restriction and to stop the train.

Amtrak 91 Collision with CSX Train—Cayce, South Carolina

In the early morning of February 4, 2018, an Amtrak passenger train unexpectedly entered a siding near Cayce, South Carolina, and collided with a stationary CSX freight train. Two of the crewmembers—the engineer and the conductor—were killed, and at least 92 passengers and crewmembers were transported to medical facilities. Our investigation is ongoing, but on February 28, 2018, we issued a preliminary report.⁶

At the time of the accident, a signal suspension was in place through the area, due to signal work being done, including upgrades to prepare for implementation of PTC. Trains were being directed through the area by a CSX dispatcher, who would issue warrants, or permissions, to use the main line.⁷ The crew of the CSX train had completed work in the area, moved the train to the siding, and released their authority to use the main line back to the dispatcher. However, the switch on the main line was left open to the siding and locked. The Amtrak train, traveling at 57 mph, was diverted into the siding from the main and struck the CSX train.

This is the second accident that we are investigating involving a train being unexpectedly diverted onto a side track because of a switch left in the incorrect position in an area of track under “signal suspension” due to installation and testing of PTC. On December 5, 2017, we issued an accident brief regarding the collision of two Union Pacific Railroad freight trains that occurred on March 14, 2016, in Granger, Wyoming. One crewmember received minor injuries. We determined that the probable cause of the accident was that the employee-in-charge incorrectly used information from a conversation with the train dispatcher as authorization to send a train into the signal suspension territory. Contributing to the accident was the failure of a crewmember to check the switch position before authorizing the train to enter the signal suspension territory.⁸

In both the Granger and Cayce accidents, human decisionmaking and actions likely played key roles. Safe movement of the trains through the signal suspension depended on proper switch alignment, which, in turn, relied on error-free manual work. The risk of error was not safeguarded, either by technology or supervision. The reliance on error-free human performance for safe train movement creates a single point-of-failure given the current operating practices and regulations. We concluded that additional measures are needed, such as restricted speed, to ensure safe operations during signal suspensions, especially during the movement of passenger trains, due to the likelihood of harm to the traveling public.

⁵ NTSB, Preliminary Report, RRD18MR001 (January 4, 2018).

⁶ NTSB, Preliminary Report, RRD18MR003 (February 28, 2018).

⁷ Signal suspension means train control signals located alongside the track have been taken out of service, oftentimes for maintenance or system upgrades. When these signals are taken out of service, train movements are controlled by means such as absolute blocks or by track warrants.

⁸ NTSB, Collision of Two Union Pacific Railroad Freight Trains, Granger, Wyoming. Rpt. No. NTSB/RAB-17-10 (December 5, 2017).

Therefore, on February 13, 2018, we issued an urgent safety recommendation to the FRA to issue an emergency order directing railroads to require that when signal suspensions are in effect and a switch has been reported relined for a main track, the next train or locomotive to pass the switch location must approach with a restricted speed. After verifying the switch position, the train crew would be required report to the dispatcher that the switch is correctly lined for the main track before trains would be permitted to operate at maximum-authorized speed.⁹ We only issue urgent recommendations when we determine that the course of action requires immediate attention to avoid imminent loss due to a similar accident.

On April 23, 2018, the FRA published a notice of draft safety advisory in response to our urgent safety recommendation. The proposed safety advisory recommends that railroads adopt industry best safety practices regarding railroad operations under temporary signal suspensions. Because FRA's proposal would not require adoption of such practices, as called for by our urgent safety recommendation, the NTSB has classified this urgent safety recommendation as "Open—Unacceptable Response." Furthermore, it is noteworthy that FRA has not even published proposed industry best practices. We believe that the FRA must act now to prevent accidents like those in Granger or Cayce.

On July 10 and 11, 2018, we held a 2-day investigative hearing to explore issues involved in the DuPont and Cayce accidents. The purpose of the hearing was to elicit additional factual information about the accidents as part of our ongoing investigations. The factors involved in these accidents are comprehensive and we are examining a multitude of aspects beyond PTC, including Amtrak operations on host railroads and safety management systems in passenger rail.

CONCLUSION

The NTSB is gravely concerned that the majority of the Nation's railroads, particularly passenger railroads, required to install PTC will not have fully operational systems by the December 31, 2018, deadline. I appreciate the committee holding another hearing this year on the importance of PTC, and I am here today to urge implementation of this lifesaving technology without further delay. For each day that goes by without PTC, we are at continued risk for another tragic accident.

Thank you for the opportunity to testify before you today. I look forward to responding to your questions.

Mr. DENHAM. Thank you, Mr. Sumwalt.

Ms. Fleming, you are recognized.

Ms. FLEMING. Chairmen Shuster and Denham, Ranking Members DeFazio and Capuano, and members of the committee, thank you for the opportunity to discuss railroads' implementation and FRA's oversight of PTC, one of the most promising technological advances in rail safety in decades.

As you know, GAO has been closely tracking and reporting on railroads' and FRA's PTC efforts since 2010. Although railroads and FRA have made some progress in certain areas, it has been slow. And in light of the implementation and other challenges, we have consistently cautioned that some railroads may not meet required deadlines.

We are now fast approaching the December 31, 2018, deadline for railroads to either fully implement PTC or seek an extension of up to 2 years. My testimony today focuses on two issues: the progress that railroads required to implement PTC have made, and FRA's efforts to assist them; and how railroads and FRA plan to approach the December 2018 and 2020 deadlines.

With respect to railroads' progress, we found that many railroads remained in the early implementation stages, meaning equipment installation and initial field testing. Equipment installation presents a more positive picture. Half of railroads were still installing

⁹ NTSB, Safety Recommendation Report: Train Operation During Signal Suspension. Rec. No. R-18-005 (February 13, 2018).

equipment on trains and alongside tracks. However, nearly three-quarters reported being more than 90 percent done.

Progress varied more widely with respect to testing. All of the Class I freights and Amtrak had initiated field testing and entered the latter stage of advanced testing known as revenue service demonstration, or RSD.

By contrast, 19 commuter railroads and 2 Class II and III freight railroads had initiated field testing, and only 8 commuter railroads and no Class II or III had initiated RSD. Initiating RSD is important for two reasons: first, it allows railroads to test trains operating PTC as part of their regular operations; second, unless commuter or Class II or III freights receive FRA approval to use substitute criteria, they must initiate RSD by year-end to qualify for an extension.

In this regard, FRA's recent clarification about substitute criteria may lessen concerns, at least in the near term, about the number of railroads that had yet to initiate RSD. In three symposia this summer, FRA officials explained that initiating field testing could potentially qualify as substitute criteria. Consistent with our recommendation, FRA also clarified other aspects of its planned approach for reviewing and granting extensions. Railroad representatives welcomed this information, though a few wish FRA had shared it much sooner.

Turning to this year's deadline, as of August, eight railroads anticipate reaching full implementation by December. The remaining 32 said they plan to apply for an extension. To date, only one had done so. Sixteen said they intend to use substitute criteria. For those railroads that fail to meet either year-end requirement, FRA officials said that the levying of civil fines is a yet-to-be-made policy decision, and will take into account specific circumstances.

Given that applying for an extension appears to be the general approach, rather than the exception, to the upcoming deadline, much work will need to be accomplished to achieve full PTC implementation in the final 2-year window. Many railroads will need to either initiate or complete field testing. To date, moving from field testing to RSD has taken railroads, on average, 2 years to complete. And about one-quarter of the railroads told us that they had encountered software bugs or other challenges related to the maturity of the system.

Moreover, interoperability remains a great unknown. Almost all railroads implementing PTC share track with at least one other railroad, and therefore, must ensure their PTC systems operate with each other. This poses a particular challenge for Class I freight railroads, especially in dense areas, such as Chicago, where 14 different railroads interoperate.

While Class I's are in the latter stages of implementation, they cannot begin interoperability testing until their tenant railroads fully implement PTC. In turn, FRA's already substantial workload will increase. FRA has re-allocated some internal resources, and begun reviewing draft documents to help address the upcoming surge of anticipated submissions.

One of the last documents railroads must submit is their safety plan. As of July, 34 railroads had yet to do so. FRA officials estimated that each safety plan would take 6 months to 1 year to re-

view. Prioritizing resources based on risk will continue to be key to FRA's ability to manage its workload and oversight responsibilities.

In conclusion, today, almost a decade after the tragic rail accident in Chatsworth, California, it remains an open question whether railroads and FRA are poised to complete the remaining work and overcome the ongoing challenges facing them to achieve full PTC implementation by 2020.

Chairman, this concludes my statement, and I would be pleased to answer any questions you or members of the committee have.

[Ms. Fleming's prepared statement follows:]

**Prepared Statement of Susan A. Fleming, Director, Physical Infrastructure,
U.S. Government Accountability Office**

Chairman Denham, Ranking Member Capuano, and members of the subcommittee:

Thank you for the opportunity to discuss our work in reviewing railroads' and the Federal Railroad Administration's (FRA) efforts to implement positive train control (PTC). In September 2008—10 years ago this month—a commuter train and freight train collided in the Chatsworth neighborhood of Los Angeles, California, resulting in 25 deaths and over 100 injuries. In the wake of this accident, legislation was enacted requiring certain railroads to implement PTC—a communications-based system designed to slow or stop a train that is not being operated safely.¹ Forty railroads are required to implement PTC.² These railroads include 28 commuter railroads and Amtrak, which collectively provide over 500 million passenger trips annually. Railroads that play a key role in our nation's freight network must also implement PTC, including the 7 largest Class I and 4 Class II and III freight railroads.³

As we have previously reported, PTC implementation is a complex and lengthy process, which touches almost every part of major rail lines and almost every aspect of railroads' train operations.⁴ Each implementing railroad must install more than 20 major components that will ultimately communicate trains' locations, movements, and speed, and then slow or stop a train that is not being operated safely. Full implementation of PTC involves a number of steps, including but not limited to: planning and system development, equipment installation, testing, system certification, and achieving interoperability. Since U.S. railroads often operate some or all of their trains as "tenants" on the track of another railroad, known as the "host," interoperability is intended to enable trains that operate on the same track to be governed by the PTC system and to move seamlessly across track owned by different railroads.

When PTC implementation was mandated in 2008, the deadline for railroads' implementation was December 31, 2015. We reported in September 2015 that nearly all railroads did not expect to meet this deadline.⁵ In October 2015, Congress extended the deadline to December 31, 2018, and established criteria that would enable FRA, the agency responsible for overseeing PTC implementation, to grant railroads meeting certain requirements an alternative schedule up to year-end 2020.⁶ Throughout this statement we refer to the alternative schedule as the "extension." My testimony today includes work conducted at the request of Chairman Denham and Ranking Member Capuano as well as Chairman Bill Shuster and Ranking Member Peter DeFazio of the House Committee on Transportation and Infrastruc-

¹ The Rail Safety Improvement Act of 2008, Pub. L. No. 110-432, div. A, 112 Stat. 4848 (2008).

² Specifically, these 40 railroads are currently subject to the statutory mandate that requires the implementation of a PTC system on certain main lines.

³ Freight railroads are classified by operating revenues. As of 2017, Class I railroads are those carriers with annual operating revenues of \$447.6 million or more. Class II railroads are carriers with annual operating revenues of less than \$447.6 million but in excess of \$35.8 million, and Class III railroads have annual carrier operating revenues of \$35.8 million or less.

⁴ See GAO, *Positive Train Control: Additional Authorities Could Benefit Implementation*, GAO-13-720 (Washington, DC, Aug. 16, 2013).

⁵ See GAO, *Positive Train Control: Additional Oversight Needed As Most Railroads Do Not Expect to Meet 2015 Implementation Deadline*, GAO-15-739 (Washington, DC, Sept. 4, 2015).

⁶ The Positive Train Control Enforcement and Implementation Act of 2015, Pub. L. No. 114-73, § 1302, 129 Stat. 568, 576-582 (2015), codified at 49 U.S.C. § 20157.

ture. Specifically, my testimony discusses the efforts of FRA and railroads to implement PTC as the December 31, 2018, deadline approaches and since we last testified on PTC in March 2018.⁷ My statement today will address (1) railroads' implementation progress and the steps that FRA has taken to assist them and (2) how railroads and FRA plan to approach PTC implementation to meet the December 2018 and December 2020 deadlines.

To describe railroads' progress, we analyzed the most recent available quarterly PTC implementation reports that railroads submitted to FRA, reports that reflected the progress as of June 30, 2018. We analyzed the reports to determine the extent that each railroad has installed PTC hardware and initiated testing. Based on our review of these data for anomalies, outliers, or missing information and our previous assessment of such quarterly reports for our March 2018 testimony, we determined that these data were sufficiently reliable for our purposes of describing railroads' progress in PTC implementation. To describe railroads' and FRA's progress and approaches, we interviewed representatives from 16 passenger and freight railroads, including the 12 railroads (11 commuters and 1 Class III) that FRA identified in June 2018 as at risk of not having implemented PTC or qualifying for an extension by December 31, 2018.

The remaining 4 railroads we interviewed were: Amtrak; 2 Class I freight railroads, which were selected based on their relationships with tenant railroads and substantial progress toward PTC implementation; and a commuter railroad that received approval from FRA in March 2018 for an exception from PTC system implementation. To describe how railroads and FRA plan to approach PTC implementation for the December 2018 and 2020 deadlines, we sent 41 railroads a semi-structured questionnaire.⁸ The questions we asked were based on the data collection efforts from our March 2018 testimony. We analyzed railroads' responses and summarized their plans and challenges into common categories. To determine the stage of PTC implementation railroads expected to reach by December 31, 2018, we considered railroads' responses to our questionnaire, information provided in interviews, and documents submitted to FRA regarding railroads' planned implementation approaches, among other information. To describe railroads' progress and FRA's actions to assist railroads, we interviewed the industry associations for commuter (American Public Transportation Association) and freight (Association of American Railroads) railroads, and two PTC vendors. We also reviewed applicable laws and FRA regulations, presentations, reports, and guidance and interviewed FRA officials.

We conducted this performance audit from June 2018 to September 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

BACKGROUND

PTC systems are required by law to prevent certain types of accidents or incidents. In particular, a PTC system must be designed to prevent train-to-train collisions, derailments due to excessive speed, incursions into work zone limits, and the movement of a train through a switch left in the wrong position.⁹ While railroads may implement any PTC system that meets these requirements, the majority of the railroads are implementing one of four types of systems.¹⁰ PTC's intended safety benefits can be fully achieved nationwide when all required railroads have successfully installed PTC components, tested that these components work together and the

⁷ GAO, *Positive Train Control: Many Commuter Railroads Still Have Significant Additional Implementation Work and Opportunities Exist to Provide Federal Assistance*, GAO-18-367T (Washington, DC, Mar. 1, 2018).

⁸ We sent the questionnaire to all 40 railroads that are currently required to install PTC and the one commuter railroad that was granted a mainline track exception in March 2018. In March 2018, we reported that 41 railroads were required to implement PTC. However, since then one commuter railroad received approval from FRA for a main line track exception, meaning it is no longer required to implement PTC. FRA can grant main line track exceptions under certain conditions, such as through limited operations. 49 C.F.R. § 236.1019(c). In this case, a commuter railroad reduced its regularly scheduled service by one train on 1 day of the week to 12 regularly scheduled one-way trains per day.

⁹ The Rail Safety Improvement Act of 2008, Pub. L. No. 110-432, div. A, 122 Stat. 4848 (2008).

¹⁰ The four types of PTC systems are the Interoperable Electronic Train Management System (I-ETMS), the Advanced Civil Speed Enforcement System, the Enhanced Automated Train Control (E-ATC), and the Incremental Train Control System (ITCS).

systems function as designed, and are interoperable with other host and tenant railroads' PTC systems that share track. Interoperability means the locomotives of any host railroad and tenant railroad operating over the same track segment will communicate with and respond to the PTC system, allowing uninterrupted movements over property boundaries.¹¹ Interoperability is critical to PTC functioning properly given the complexity of the rail network in the United States. In much of the country, Class I railroads function as hosts for Amtrak and commuter railroads. For example, one of the seven major Class I railroads reports that 24 tenant railroads operate over its PTC-equipped tracks, including freight, Amtrak, and commuter railroads. A notable exception to this is the Northeast Corridor, which runs from Washington, DC, to Boston, Massachusetts, which Amtrak predominantly owns and over which 6 freight and 7 commuter railroads operate as tenants.

PTC implementation involves multiple stages to achieve full implementation, including planning and system development, equipment installation and testing, system certification, and full deployment, including interoperability. Each railroad must develop an FRA-approved PTC implementation plan that includes project schedules and milestones for certain activities, such as equipment installation.¹² The equipment installation stage involves many components, including communication systems; hardware on locomotives and along the side of the track (called "wayside equipment"); and software in centralized office locations as well as onboard the train and along the track.¹³ Railroads are required to report quarterly and annually to FRA on the railroad's PTC implementation status relative to the implementation plan.¹⁴ A railroad can also revise its implementation plan to reflect changes to the project, which then must be reviewed and approved by FRA.

In addition, railroads must demonstrate that the PTC system is deployed safely and meets functional requirements through multiple stages of testing. Before initiating testing on the general rail system, railroads must submit a formal test request for FRA approval that includes, among other things, the specific test procedures, dates and locations for testing, and the effect the tests will have on current operations. The multiple stages of PTC testing include:

- *Laboratory testing*: locomotive and wayside equipment testing in a lab environment to verify that individual components function as designed.
- *Field testing*: includes several different tests of individual components and the overall system, such as testing of each locomotive to verify that it meets functional requirements and field integration testing—a key implementation milestone to verify that each PTC component is integrated and functioning safely as designed.
- *Revenue service demonstration (RSD)*: an advanced form of field testing in which the railroad operates PTC-equipped trains in regular service under specific conditions.¹⁵ RSD is intended to validate the performance of the PTC system as a whole and to test the system under normal, real-world operations.
- *Interoperability testing*: host and tenant railroads that operate on the same track must work together to test interoperability to ensure each railroad can operate seamlessly across property boundaries. Almost all of the 40 railroads currently required to implement PTC must demonstrate interoperability with at least one other railroad's PTC system.

¹¹ See 49 U.S.C. § 20157. With certain exceptions, full implementation requires all controlling locomotives to be equipped with a fully operative and functioning onboard PTC apparatus, including the controlling locomotives for each host railroad and each tenant railroad operating on a PTC-equipped track segment. 49 C.F.R. § 236.1006.

¹² The Rail Safety Improvement Act of 2008 required that railroads submit an implementation plan by April 16, 2010. When the PTC implementation deadline was extended to 2018 under the PTC Enforcement and Implementation Act of 2015, railroads were required to submit a revised implementation plan by January 27, 2016, to outline how and when each railroad plans to achieve full PTC implementation.

¹³ See GAO-18-367T and GAO-15-739. In this statement, we use the term locomotive generally to refer to any of the variety of vehicles, such as cab cars and electric multiple unit trains, that commuter railroads may need to equip. Wayside equipment includes items such as communication towers or poles, switch position monitors, wayside radios, wayside interface units, and base station radios.

¹⁴ To effectively monitor each railroad's progress implementing PTC, FRA requires the submission of quarterly progress reports under its investigative authorities, *See, e.g.*, 49 U.S.C. §§ 20107, 20902, 20157(c)(2); 49 C.F.R. § 236.1009(h). In addition, each railroad is required to annually report to FRA on PTC implementation progress in areas such as spectrum acquisition, installation progress, and the total number of route miles where revenue service demonstration has been initiated or PTC is in operation. *See* 49 U.S.C. § 20157(c) (1); 49 C.F.R. § 236.1009(a)(5).

¹⁵ Results and data from RSD testing are also used to support the safety case outlined in each host railroads' safety plan.

Using results from field and RSD testing, combined with other information, host railroads must then submit a safety plan to FRA for approval.¹⁶ We have previously reported that these safety plans are about 5,000 pages in length.¹⁷ Once FRA approves a safety plan, the railroad receives PTC system certification, which is required for full implementation, and is then authorized to operate the PTC system in revenue service. According to FRA officials, the FRA may impose conditions to the PTC safety plan approval as necessary to ensure safety, resulting in a conditional certification.

Railroads may receive a maximum 2-year extension from FRA past the December 31, 2018, deadline if they meet six criteria set forth in statute. Specifically, railroads must demonstrate, to the satisfaction of FRA, that they have: (1) installed all PTC system hardware consistent with the total amounts identified in the railroad's implementation plan; (2) acquired all necessary spectrum consistent with the implementation plan;¹⁸ (3) completed required employee training; (4) included in a revised implementation plan an alternative schedule and sequence for implementing the PTC system as soon as practicable but no later than December 31, 2020; (5) certified to FRA that they will be in full compliance with PTC statutory requirements by the date provided in the alternative schedule and sequence; and (6) for Class I railroads and Amtrak, initiated RSD or implemented a PTC system on more than 50 percent of the track they own or control that is required to have PTC. For commuter and Class II and III railroads, the sixth statutory criterion is to have either initiated RSD on at least one territory required to have operations governed by a PTC system or "met any other criteria established by the Secretary," which FRA refers to as "substitute" criteria.¹⁹

FRA is responsible for overseeing railroads' implementation of PTC, and the agency monitors progress and provides direct assistance to railroads implementing PTC. For example, FRA officials provide technical assistance to railroads, address questions, and review railroad-submitted documentation. FRA has a national PTC director, designated PTC specialists in the eight FRA regions, and a few additional engineers and test monitors responsible for overseeing technical and engineering aspects of implementation and reviewing railroad submissions and requests. In anticipation of the upcoming implementation deadline, in May 2017, FRA began to send notification letters to railroads it determined were at risk of both not meeting the December 31, 2018, implementation deadline and not completing the requirements necessary to qualify for an extension. FRA identified "at-risk" railroads by comparing a railroad's hardware installation status to the total hardware required for PTC implementation, according to the railroad's implementation plan. FRA has increased the "at-risk" threshold percentage over time as the deadline approaches. See table 1.

Table 1: Installation Thresholds Used Over Time by the Federal Railroad Administration (FRA) to Determine Railroads At-Risk for Missing Positive Train Control (PTC) Implementation Deadlines

Date of railroad's progress from quarterly reports used to determine whether at-risk	Threshold of percent of hardware installed relative to railroad's implementation plan—below which railroads considered at-risk	Date of FRA at-risk letters sent to railroads	Number of at-risk railroads identified by FRA
December 31, 2016	50	May 2017	17
December 31, 2017	80	April 2018	15
March 31, 2018	85	June 2018	12
June 30, 2018	90	August 2018	9

Source: GAO presentation of Federal Railroad Administration information. GAO-18-692T.

¹⁶ 49 C.F.R. § 236.1015.

¹⁷ GAO-18-367T.

¹⁸ PTC uses radio spectrum to communicate a train's location, speed restrictions, and movements. Radio frequency spectrum is the medium for wireless communications and supports a vast array of commercial and governmental services. Commercial entities also use radio frequency spectrum to provide a variety of wireless services, including mobile voice and data.

¹⁹ 49 U.S.C. § 20157(a)(3)(B). FRA defines a "territory" as an entire installation/track segment as identified in a railroad's PTC implementation plan (e.g., a track segment, territory, subdivision, district, etc.).

FRA has additional oversight tools, which include use of its general civil penalty enforcement authority for failure to meet certain statutory PTC requirements.²⁰ FRA has used this authority in 2017 and 2018 to assess civil penalties against railroads that failed to comply with the equipment installation milestones, the spectrum acquisition milestones, or both, that the railroads had established in their implementation plans for the end of 2016 and 2017.

As part of our body of work on PTC, we found that railroads face numerous PTC implementation challenges and made recommendations to FRA to improve its oversight of implementation. Specifically, in 2013 and 2015 we found that many railroads were struggling to make progress due to a number of complex and inter-related challenges, such as developing system components and identifying and correcting issues discovered during testing. Most recently, we found in March 2018 that FRA had not systematically communicated information or used a risk-based approach to help railroads prepare for the 2018 deadline or to qualify for an extension.²¹ We also found that many railroads were concerned about FRA's ability to review submitted documentation in a timely manner, particularly given the length of some required documentation such as safety plans and FRA's limited resources for document review. In March 2018, we recommended FRA identify and adopt a method for systematically communicating information to railroads and use a risk-based approach to prioritize its resources and workload. FRA agreed with our recommendations.

MANY RAILROADS REMAIN IN EARLY STAGES OF PTC IMPLEMENTATION AND FRA HAS CLARIFIED EXTENSION REQUIREMENTS

Railroads Continue to Install and to Test PTC Systems, and Report Previously Identified Implementation Challenges

As of June 30, 2018, many railroads reported that they remain in the equipment installation and field-testing stages, which are early stages of PTC implementation. However, since we last testified in March 2018, railroads have made progress on equipment installation. Based on our analysis of the 40 railroads' reported status as of June 30, 2018, about half of the railroads have completed equipment installation, and many others are nearing completion of this stage. Specifically, three-quarters of the 40 railroads reported being more than 90 percent complete with locomotive equipment installation. Similarly, nearly three-quarters of railroads that must install wayside equipment reported being more than 90 percent complete.²² The remaining one-quarter of railroads are among those designated by FRA as at-risk of both not meeting the end of 2018 implementation deadline and not completing the requirements necessary to qualify for an extension. Specifically, in August 2018, FRA identified 9 railroads—all commuter railroads—as at-risk, fewer than the 12 railroads FRA had previously designated as at risk in its June 2018 letters to railroads.

Since we last testified, most commuter railroads reported slow progress with testing, especially with RSD, while Class I railroads and Amtrak have reached later stages of testing. Notably, all 7 Class I freight railroads and Amtrak reported having initiated field testing and entering RSD as of June 30, 2018. We reported in 2013 and 2015 that Class I railroads and Amtrak have been conducting PTC implementation activities for longer than commuter railroads, which has likely factored into their advanced progress.²³ However, commuter railroads and Class II/III railroads have progressed more slowly. For example:

- Laboratory and initial field testing: 19 of 28 commuter railroads reported having initiated this testing as of June 30, 2018, 6 more commuter railroads than the 13 we previously reported as having initiated field testing as of September 30, 2017.²⁴ Additionally, 2 of 4 Class II/III railroads reported having initiated testing as of June 30, 2018.

²⁰ 49 U.S.C. § 20157(e).

²¹ GAO-18-367T.

²² As of June 30, 2018, seven railroads reported that they were not required to install wayside equipment because either their hosts were responsible for installation of wayside equipment, or the PTC system being installed did not require it. We did not include these railroads when we analyzed railroads' progress in wayside equipment installation.

²³ GAO-13-720 and GAO-15-739.

²⁴ See GAO-18-367T. We determined a railroad to have initiated testing if it met one of the following criteria: (1) at least one track segment reported as "testing;" (2) at least one track segment reported as "operational/complete;" or (3) at least 1 route mile reported as in testing. Accordingly, "testing" in this context includes a range of testing activities from laboratory testing

- RSD testing: 8 of 28 commuter railroads reported initiating RSD testing as of June 30, 2018, 2 more commuter railroads than the 6 we previously reported as having entered RSD testing as of September 30, 2017. No Class II/III railroads reported having initiated RSD. As noted earlier, unless a commuter or Class II/III railroad receives approval for using substitute criteria, the railroad must initiate RSD, a final stage of PTC testing, on at least one territory by December 31, 2018, to qualify for an extension.

Railroad representatives reported that they continue to face many of the same challenges we have previously identified. For example, in response to our questionnaire to all 40 railroads implementing PTC, 14 reported challenges with PTC vendors and contractors, which we originally reported on in 2015. One railroad noted that, because its contractor manages PTC projects across the country with the same deadline and requirements, it can be difficult for all railroads to get the resources they need from their contractor. We previously reported that there are a limited number of vendors available to design PTC systems, provide software and hardware, and conduct testing. For example, we reported in 2015 that, according to railroad industry representatives, there were two vendors for the onboard train management computer and three vendors for the wayside equipment.²⁵ Likewise, we previously reported that railroads face software challenges, and noted that railroads had concerns with the number of defects identified during software testing, since these take time to address. In response to our questionnaire, 11 railroads reported encountering challenges related to maturity of the PTC software systems, such as working through software bugs or defects during testing.

FRA Has Recently Clarified Extension Requirements

In June, July, and August 2018, FRA held three PTC symposiums that were attended by representatives from all 40 railroads and that focused on the extension process and substitute criteria, PTC testing, and safety plans, respectively. FRA's June 2018 symposium covered information consistent with our March 2018 recommendation that the agency adopt a method for systematically communicating information related to the requirements and process for an extension to railroads.²⁶ Specifically, FRA presented information on the procedures for requesting and obtaining FRA's approval for an extension to implement PTC beyond the December 2018 deadline including FRA's review process.²⁷ FRA also clarified that for railroads eligible to use substitute criteria, initiating field testing was one approach that could potentially qualify as substitute criteria, rather than initiating RSD.²⁸

Representatives we interviewed from the railroads that participated in the symposiums found them to be helpful and some railroads reported that the information presented led them to adjust their approach to meeting the December 2018 deadline. For example, one railroad representative we spoke to said that until the symposium, he was unaware that using field testing as substitute criteria was a potential option. Some railroads we met with also told us they are re-evaluating what activities and documentation need to be revised and submitted to FRA before the December 2018 deadline based on the information presented at the symposiums. For example, representatives from one railroad we met with said that FRA officials encouraged them to update their PTC implementation plan right away with current equipment installation totals, to ensure consistency across all required documentation by the end of 2018. A couple of railroads noted that the information presented at the symposiums clarified many questions and would have been beneficial to know a year or two earlier in the implementation process.

In addition, in recent months FRA has continued to provide assistance to railroads and has taken a series of steps to better prepare railroads for the 2018 deadline. These steps include meeting regularly with individual railroads and developing approaches intended to help many railroads meet the requirements necessary for a deadline extension. For example, representatives from one commuter railroad said agency officials have been willing to share lessons learned, clarify requirements, and review draft documentation to provide informal feedback.

to on-track field integration testing. Additionally, because field testing is a prerequisite for RSD, these counts include some railroads that may have also initiated RSD.

²⁵ GAO-15-739.

²⁶ GAO-18-367T.

²⁷ FRA has 90 days to approve a railroad's alternative schedule and sequence plan and provide notification to the railroad of its decision. See 49 U.S.C. § 20157(a)(3)(C); 49 C.F.R. § 236.1011(a), (c). Within 45 days of receiving notification of a railroad's alternative schedule and sequence plans, FRA must provide to the railroad notification of any deficiencies that would prevent FRA approval and provide an opportunity to correct the deficiencies.

²⁸ FRA officials noted that each application for substitute criteria is different, with different circumstances, and that applications are evaluated individually on a case-by-case basis by FRA.

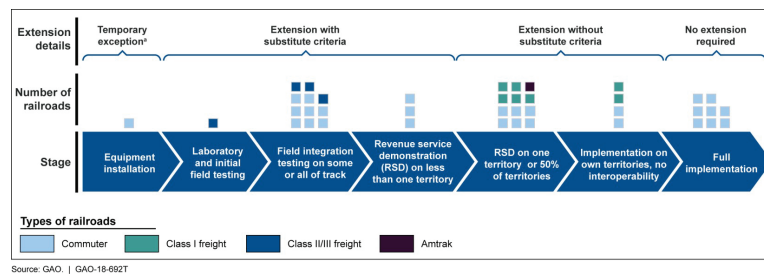
RAILROADS AND FRA ARE WORKING TOWARD EXTENSIONS, LEAVING SUBSTANTIAL WORK TO BE COMPLETED BEYOND 2018

Most Railroads Anticipate Needing an Extension, and Many Plan to Start RSD Testing Beyond 2018

More than three-quarters of railroads (32 of 40) reported to us that they plan to apply for an extension.²⁹ However, FRA officials noted that with the exception of possibly one or two railroads, they anticipate that all railroads will likely need an extension. As of September 2018, most railroads have not submitted their request for an extension. A railroad must demonstrate that it has met all of the criteria to qualify before it may formally request an extension, and as previously discussed, many railroads remain in the early stages of PTC implementation. Of the eight railroads that anticipate reaching full implementation by December 31, 2018, five have conditionally certified safety plans; one has submitted its safety plan for review; one plans to submit its safety plan to FRA in fall 2018 for certification; and one did not specify when it would submit its safety plan for certification.³⁰

Of the 32 railroads that intend to apply for an extension, half reported that they plan to use substitute criteria to qualify, including 12 commuter and 4 Class II and III railroads.³¹ Moreover, three-quarters of the commuter and Class II and III railroads that plan to use substitute criteria (12 of 16) intend to apply to use their initiation of field testing or lab testing as substitute criteria. Figure 1 depicts the stage of PTC implementation railroads at least expect to reach by December 31, 2018, to be in compliance, based on railroads' responses to our July August 2018 questionnaire.

Figure 1: Number of Railroads Expected in Each Positive Train Control (PTC) Implementation Stage by December 31, 2018



Note: This graphic is based on railroads' self-reported expectations and approaches to be in compliance as of December 31, 2018. Railroads may make more or less progress than expected. For tenant-only railroads—railroads that only run on hosted track—we considered both the tenant and the host railroads' reported expectations, including for extensions, which, according to FRA, are generally applied for and granted to host railroads but which also cover tenants.

^a Railroads that were granted a temporary mainline track exception may remain in the installation stage. FRA can grant mainline exceptions under certain conditions, such as through limited operations. 49 C.F.R. § 236.1019(c).

Although FRA has recently made clear that it is authorized to grant extensions based on initiating field testing or other FRA-approved substitute criteria, this approach defers time-intensive RSD testing into 2019 and beyond. In March 2018, we testified FRA officials told us that moving from the start of field testing to the start

²⁹ According to FRA officials, tenant-only railroads are not required to apply for an extension but are covered under extensions applied for and granted to their host railroad(s). Therefore, we considered tenant railroads that told us that their hosts would be applying for an extension on their behalf as part of the 32 railroads cited here. This total includes two total tenant railroads that told us that they would require an extension because one or more of their hosts would not reach full implementation.

³⁰ This includes some tenant railroads that are included in their hosts' conditionally—certified safety plans and that have achieved, or expect to achieve, full interoperability with those host(s).

³¹ As previously mentioned, only commuter and Class II and III railroads may apply for substitute criteria. According to publicly available documents, as of September 2018, 6 railroads had submitted substitute criteria applications to FRA for approval, and FRA had approved 5.

of RSD can take between 1 and 3 years, and has averaged about 2 years for those railroads that have completed that stage. We also testified that FRA officials believe that most railroads underestimate the amount of time needed for testing.³² FRA officials told us that they do not consider railroads that are approved for an extension under substitute criteria to be necessarily at a higher risk of not completing PTC implementation by 2020. However, in light of these time estimates and the unknown challenges that railroads may face during testing, railroads that are in the early field-testing stage moving into 2019 could face challenges completing PTC implementation by the extended December 2020 deadline.

Railroads further behind in PTC implementation may need to apply for an extension due to factors such as compressed implementation schedules, as well as the time needed for FRA approvals. For example, representatives from one commuter railroad said they hope to reach RSD before the December 31, 2018, deadline, but that it would be difficult to meet the extension requirements, apply for, and receive an extension given the volume of paperwork FRA will be receiving at the end of the year. Instead, the railroad plans to submit an extension request using substitute criteria consisting of field testing in order to be in compliance at the end of the year. Such an approach involves first applying for and receiving approval for substitute criteria and then formally requesting an extension and submitting supporting documentation to FRA before the end of the year. Entering RSD prior to the deadline could be difficult given that FRA officials told us they have advised railroads to allow at least a month for FRA's review of test requests, which must be approved prior to initiating field testing and RSD.

Additionally, for some railroads further along in PTC implementation, particularly Class I freight railroads, interoperability is a key remaining hurdle for full implementation by the end of 2018, and railroads expect this challenge to persist in the future. The two Class I railroads we interviewed noted that ensuring all tenant railroads are PTC-equipped, tested, and interoperable is a primary reason the railroads plan to request an extension. One of these host railroads also reported that it has little ability to influence its tenants' progress with PTC implementation. Across all 40 railroads, 8 reported current or anticipated challenges working with tenant or host railroads, or both, to plan and conduct testing to ensure interoperability. Moreover, given that few railroads have reached the interoperability testing stage, the challenges railroads may face in this stage remain unclear. For example, some railroads we interviewed noted it is unknown how much time and effort will be required to work through interoperability issues during testing to ensure the system's reliability. One railroad association stated that interoperability is, and will continue to be, a substantial challenge for metropolitan areas with dense and complex rail networks with several host-tenant relationships. For example, according to one commuter railroad, 14 different freight and commuter railroads will need to interoperate in the Chicago area.

FRA's Substantial Workload Remains a Concern

FRA's already substantial workload is expected to increase as railroads continue to submit documentation necessary for extensions and continue PTC implementation activities. FRA is focused on ensuring railroads are in compliance through the December 2018 deadline—whether via an extension or by completing implementation. While FRA officials report that they anticipate almost all railroads will likely request an extension, only one—a Class I railroad—had submitted an application for an extension as of early September 2018.³³ FRA will need to review and approve all related documentation associated with each extension request and make a determination within 90 days, meaning if a railroad were to submit its extension request on December 31, 2018, FRA would have until the end of March 2019 to approve or deny the railroad's extension request.³⁴ In addition to extension requests and supporting documentation, many railroads will also be submitting to FRA: requests for substitute criteria, test requests to initiate field testing or RSD, revisions to PTC implementation plans, and PTC safety plans.

To help manage the forthcoming influx of documentation, FRA officials have offered to review draft documentation, such as substitute criteria requests and test requests, and have advised railroads to take FRA's review times into account prior

³² GAO-18-367T.

³³ FRA approved the railroad's revised PTC implementation plan and alternative schedule and sequence on September 5, 2018.

³⁴ FRA officials noted that FRA's decision is based on whether the railroad has met the statutory criteria for an alternative schedule, and that if the requesting railroad meets all applicable statutory criteria, FRA must approve the alternative schedule. 49 U.S.C. § 20157(a)(3)(C). According to FRA officials, while FRA's decision is pending, the railroad is considered in compliance with PTC requirements and FRA will not assess civil penalties.

to submitting required documentation. FRA officials told us that in trying to manage their workload, they initially told railroads they did not have time to review draft submittals. However, they found that taking the time to conduct draft reviews ultimately led to higher quality formal submittals and accelerated the overall review process. In addition, FRA officials said that their goal is to not delay any railroad that is ready to move into testing, and that they advised railroads to build 30–45 days for test request reviews into their project schedules.

Despite these efforts, railroads remain concerned about the agency's ability to manage the PTC workload in the coming months and beyond 2018. For example, 9 of the 40 railroads identified FRA's resources and review times as a challenge leading up to the December 2018 deadline. Based on similar concerns, in March 2018, we recommended FRA develop an approach to prioritize the allocation of resources to address areas of greatest risk as railroads work to complete PTC implementation.³⁵ FRA has acknowledged the railroads' concern given the surge of submittals requiring FRA approval in 2018 and has reported the agency is reallocating existing expertise and expanding the PTC workforce through training, expanding contracts with existing support contractors, and initiating one additional contract to provide technical support. For example, FRA officials told us that they reallocated resources to shift PTC Specialists' responsibilities to focus exclusively on testing-related activities because their involvement is critical for the testing stage.

Although FRA has taken steps to provide key extension information to railroads and help ensure railroads' compliance with PTC deadlines, uncertainty remains, particularly in regard to FRA's enforcement strategy if railroads are noncompliant with the statute, such as if railroads were to fail to apply for an extension by the deadline. Representatives from all railroads implementing PTC we met with told us that FRA's planned enforcement approach for any railroad that fails to meet the requirements for an extension beyond 2018 is unclear. FRA officials told us they have shared the range of applicable civil penalties with railroads for years,³⁶ but that any policy decisions about how potential fines will be levied for noncompliant railroads is a policy decision that has not yet been made. In addition, it is also unclear how the agency would approach enforcement for railroads that have a host or tenant operating on their tracks that has not completed implementation or met the requirements necessary for an extension. FRA officials said that the goal of enforcement is to help bring all railroads into compliance and that they would have to look at the specific circumstances for any host-tenant issues before assessing a fine.

In conclusion, almost all railroads will likely request an extension beyond 2018, which will require FRA approval and, for many railroads, substitute criteria requests that may result in approximately a third of railroads remaining in the early stages of PTC implementation at the start of 2019. However, given that almost no railroads have submitted extension requests, it is unlikely we will know how many railroads will be granted an extension by the December 31, 2018, deadline. Although FRA has reported taking some actions in response to our March 2018 recommendation that they better prioritize resources, FRA resources and review times remain a significant concern. These issues, combined with the ongoing implementation, testing, and interoperability challenges that a number of railroads reported to us, raise questions as to the extent FRA and the railroad industry are poised for full PTC implementation by December 31, 2020.

Chairman Denham, Ranking Member Capuano, and members of the subcommittee, this concludes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

Mr. DENHAM. Thank you.

Mr. NAPARSTEK?

Mr. NAPARSTEK. Good morning. I wish to thank Chairman Denham and Ranking Member Capuano for hosting this important discussion on Positive Train Control. I am Scot Naparstek, and I am Amtrak's chief operating officer.

I joined Amtrak in 2012, and currently oversee the 17,000 hard-working employees of Amtrak's operating departments. Our workforce does a great job, and I am proud to represent them here today.

³⁵ GAO-18-367T.

³⁶ FRA officials noted that the schedule of civil penalties is provided for in governing regulations. See 49 C.F.R. pt. 236, App. A.

At this moment, Hurricane Florence is bearing down on the east coast. And for the safety of our customers and our employees, we have adjusted our service and are making all necessary preparations to safeguard them and our infrastructure as much as possible from the impacts of this storm.

Today I will provide an update on PTC, including its operation on Amtrak-owned infrastructure, on other hosts' infrastructure, and our tenants' PTC operations on our infrastructure.

First, let me discuss our most straightforward scenario: the Amtrak trains operating over Amtrak infrastructure. In this case, Amtrak plans to be fully PTC ready and compliant by the end of this year. We have developed a detailed plan for every portion of our network, and we are executing an aggressive, yet realistic plan which will enable the remaining one-third of our route-miles to be complete by December 31st.

Second, I would like to discuss those places where Amtrak is a tenant on other hosts' infrastructure, and in fact, 72 percent of our train miles are over tracks owned and maintained by other railroads. For those tracks we are cooperating with our freight and commuter host railroads as they work to complete PTC installations.

We are currently interoperable with five hosts, and we anticipate several more before the deadline, although this is dependent on host readiness. In places where the host's PTC system is not anticipated to be ready for service by year's end, and if they have accomplished specific criteria, they will be able to apply for an alternative schedule. We expect this on 37 segments across our network, including all the portions where PTC is mandated by law, but not ready by the deadline.

Additionally, the FRA permits railroads to seek Mainline Track Exclusion Addendums if the operation meets certain criteria. Consistent with our safety management system methodology, we have been conducting detailed risk assessments to enable us to develop risk mitigation measures to address those areas without a functional PTC system.

While this risk analysis process and mitigation plan development is still underway, let me be clear that Amtrak's goal is to continue to operate all of our services over all of our current routes come January 1, 2019. Exactly how we accomplish this will vary across our network, based on the specifics of each route. But I want to assure the committee that, at this time, we believe we will have strategies in place that will permit continued operation until PTC or PTC equivalency is achieved everywhere.

Third, there are several freight and commuter railroads that operate over Amtrak's infrastructure. For those railroads who may require an FRA extension, Amtrak will work collaboratively with the FRA and each railroad on a case-by-case basis, ensuring their continued safe operations.

Amtrak's goal is for all our tenants to have operational PTC as soon as possible. But we are also mindful of the impacts that any disruption of commuter service may have, and the potential resulting safety consequences. Thus, Amtrak is working with tenants who believe they may be at risk, and the FRA to explore, through

our SMS process, how risk mitigation strategies could be applied in such situations until they are fully operable.

Amtrak has worked for years to be ready for the upcoming PTC deadline. When 2019 arrives, we will have our track, computer, training, and locomotive PTC work complete, we will be operating PTC across all the tracks we control, and across much of the host railroad network.

On January 1, 2019, we anticipate that 90 percent of our trains will operate with PTC protection along some or all of their routes. We expect the FRA will have granted the remaining portions an alternative schedule or an exemption. Given the difficulty of completing testing with so many freight and commuter partners, and the potential for technical issues to arise during testing, Amtrak will be required to submit an application to the FRA for an alternative schedule to enable us to continue operating while we finalize testing of our system and the systems of our hosts and tenants.

This alternative schedule is required due to the FRA's interpretation of the law that full implementation status cannot be achieved until all non-Amtrak trains operating on Amtrak's PTC-equipped lines are also PTC-compliant.

As previously mentioned, we will implement mitigation measures for all those areas which will not have operational PTC, due to a host's alternative schedule of PTC exemption.

PTC is not a silver bullet, and railroads alone cannot solve all the safety issues that face us, such as grade crossing and trespasser accidents, which require efforts from local, State, and Federal stakeholders. Still, we are confident that achieving PTC or PTC-equivalent levels of safety across our network will be a major safety achievement. In fact, it is our goal to be the safest passenger railroad in North America.

Thank you for the opportunity to appear here before you today, and I welcome questions.

[Mr. Naparstek's prepared statement follows:]

Prepared Statement of Scot Naparstek, Chief Operating Officer, Amtrak

INTRODUCTION

Good morning. I wish to thank Chairman Denham and Ranking Member Capuano for hosting this important discussion on Positive Train Control (PTC). My name is Scot Naparstek, and I am Amtrak's Chief Operating Officer. I joined Amtrak in 2012, and currently oversee Amtrak's operations, including the Transportation, Engineering, and Mechanical departments, and their nearly 17,000 hardworking operating employees. Our workforce does a great job and I am proud to represent them here today, on behalf of our President and Chief Executive Officer Richard Anderson, who previously testified before this subcommittee in February of this year.

Amtrak is committed to running the safest intercity passenger rail system we can for our customers and employees. PTC represents an essential next step for the rail industry to improve safety of train operations, and it will make the entire U.S. rail network safer for passengers, railroad employees, and the cities and towns through which the national rail network traverses. Thus, we have developed a policy of network-wide PTC or PTC-equivalency at Amtrak. Simply stated, we believe that all of our trains and routes should eventually be equipped with PTC or employ some other suite of technology and operating practices that addresses the safety risks that PTC helps to mitigate. Given the tragic incidents Amtrak has experienced since the PTC mandate was enacted in 2008, particularly relating to over-speed situations which are a risk regardless of the amounts or types of traffic using a specific route, we think this is the safest course and the right standard for the nation's intercity passenger rail carrier.

Amtrak has long been a leader in the installation of PTC, having already deployed systems on two-thirds of the route-miles where we control the tracks, including nearly all of the Northeast Corridor (NEC), the busiest railroad in North America. In fact, Amtrak began PTC operations almost 20 years ago as part of our introduction of Acela Express high-speed rail service. The Advanced Civil Speed Enforcement System, or ACSES, that we first deployed in 2000 is active and in force on all of our trains operating on Amtrak's tracks anywhere between Washington and Boston, a deployment that we accomplished by the original December 31, 2015, PTC deadline.

OVERVIEW

Today, I will provide an update on PTC, including its operation on Amtrak-owned infrastructure, Amtrak's PTC operation on other hosts' infrastructure, and other tenants' PTC operations on Amtrak-owned infrastructure.

As we have discussed with you before, PTC systems are designed to provide protection from the following conditions: train-to-train collisions; operating over misaligned switches; over-speed events; and work zone incursions. While we acknowledge that PTC is complicated and difficult to implement, Amtrak has made significant progress implementing PTC across the routes and equipment we control. As of September 10, 2018:

- 88 percent of the minimum number of Amtrak-owned locomotives required for revenue service are fully equipped and PTC operable,
- 122 of 142 installations on 114 State-owned locomotives and cab cars that Amtrak operates or maintains are complete, and 53 are also tested, and PTC operable,
- 8 of 11 installation/track segments completed,
- 132 of 140 radio towers fully installed and equipped,
- 100 percent of employees trained as required per the PTC Implementation Plan to run in revenue service,
- 607 of 901 route-miles in PTC operation, and
- 480 route-miles in testing.

We are proud of the work we have accomplished thus far and remain focused on the work ahead to advance PTC as soon as possible.

AMTRAK'S OPERATIONS ARE UNIQUE

In many ways, the installation and deployment of PTC reflects the complicated nature of railway operations in the United States. Multiple companies and agencies must cooperate closely to ensure the safe, reliable, timely operation of various types of trains across differing networks. To integrate PTC into this complex environment has been a significant undertaking for the industry and its suppliers. Amtrak and its industry partners remain eager to bring this technology online, but there is no way around the fact that it is a difficult process and has required the dedication of significant resources, both in terms of funding and of our personnel. Over the last few years Amtrak and many other railroads have worked to develop complicated deployment plans, and then rethink them, as various limitations became apparent.

At a scale unlike any other carrier in North America, Amtrak operates over a large and complex network of various host railroads and is also a host itself to numerous tenants. Our unusual role within the industry reflects our unique origins, and while this presents a wide range of challenges, it also creates opportunities for us to serve as a leader in a number of important ways. For example, earlier this year Amtrak organized and hosted PTC summits in Seattle, Washington and Chicago, Illinois, which brought together freight railroads, commuter railroads, government agencies, and vendors to focus on the challenges of PTC implementation in those regions. These events have been followed by an ongoing series of regular calls that have allowed the participants to learn from one another, to share their latest developments, to coordinate testing schedules, and to work through all sorts of unexpected issues.

Amtrak has also worked hard to share our PTC expertise with our partners. We have done this in ways both large and small, but two quick examples include: preparing to install and commission PTC equipment on 13 locomotives for the North Carolina Department of Transportation, ensuring those units will be ready in time for the deadline; and conducting an engineering survey of the new Siemens Charger locomotives that belong to the Illinois Department of Transportation, so that they could fully understand what they need to do to equip that fleet to become PTC-ready.

Our work across all these fronts and with so many partners has enabled us to make significant progress, but it has also revealed a number of limitations and bot-

tlenecks. System federation and the subsequent interoperability testing of the IETMS PTC system are complicated tasks. By definition, they depend on coordinating with external partners who are facing their own time and resource constraints. As we have worked through these issues, we have learned much that we expect will streamline the work involved in the remaining portions.

Another issue that was raised in February's hearing that has continued to present challenges is the limited number of vendors available to support the industry. While Amtrak has developed significant PTC expertise in the last few years, there are still times when we would appreciate the ability to better utilize additional vendors to expedite the installation, configuration, and testing of various PTC components. There is simply not a deep reservoir of relevant expertise available to the rail industry, which has resulted in all of the railroads turning to the same small number of vendors seeking the same resources. To work around this, we have worked hard to foster the necessary skills inside of Amtrak, and we will continue to do so, but that is a slow and expensive process.

Looking ahead to the upcoming December 31 deadline, let me address three important environments so that you can fully understand where Amtrak stands with its PTC deployment.

AMTRAK PTC OPERATION ON AMTRAK-OWNED INFRASTRUCTURE

First, the most straightforward scenario Amtrak faces is when Amtrak trains operate over Amtrak infrastructure. In this case, Amtrak plans to be fully PTC ready and compliant by the end of this year.

Where Amtrak owns or operates the infrastructure, Amtrak is responsible for all elements of the PTC system. These rail lines include the following: 397 miles of the 457-mile Northeast Corridor mainline between Washington and Boston; 105 miles between Philadelphia and Harrisburg, Pennsylvania; 232 miles between Porter, Indiana and Dearborn, Michigan; 94 miles between Schenectady and Poughkeepsie, New York; and 61 miles between New Haven, Connecticut and Springfield, Massachusetts. We also own or operate another 12 miles of track near our terminals, for example, in Chicago and New York. These segments total 901 route-miles. Currently 605 of them have at least one wayside PTC system installed and operational. We have developed a detailed plan for every portion of our network, and we are executing an aggressive yet realistic plan which will enable the remaining third of the route-miles to be complete by December 31.

In some places where we host tenant operations over our tracks, at the freight railroads' request, we are installing the freight's standard IETMS PTC system on our infrastructure in parallel with either our ACSES or ITCS system, which will eliminate the requirement for them to install either ACSES or ITCS PTC equipment on their locomotives. Locations where this occurs include along the NEC between Washington and Philadelphia, along the Keystone Line between Frazer and Harrisburg, Pennsylvania, and the eastern, Michigan-owned portion of the Michigan Line between Kalamazoo and Dearborn. 345 miles, or roughly two-fifths, of our 901 route-miles will be equipped with dual PTC systems.

Amtrak is dedicating significant attention to the segments where PTC installation is not yet complete, such as the Springfield and Hudson Lines. We hold regular cross-department meetings to ensure rapid coordination in our efforts, as we are giving this work the highest priority. While the timeline for these segments is indeed tight, we are planning to complete these projects by the December 31 deadline.

For Amtrak locomotives, the process starts with installing the necessary equipment for one or, in some cases, two different PTC systems, and then running each unit through the necessary tests to ensure the proper functioning and integration of the various elements, which we call "commissioning." Given the need for multiple PTC systems in individual locomotives, we have added 535 systems to 443 units, and have completed commissioning on 456 of them. Again, we have developed detailed plans and are confident we will have the commissioning work done in time for the December 31 deadline.

So much of the discussion around PTC relates to the hardware, that sometimes we do not properly convey how important training is to the successful rollout of PTC across our operations. To ensure our workforce is ready, we will need to provide training to, and ensure the successful completion of, 5,095 qualifications. All of those qualifications are complete. As some employees will need to be trained on multiple systems, the number of qualifications is higher than the specific number of people being trained. Of the overall total, 70 percent are for the train and engine crews who operate the trains, with dispatchers, maintenance of way, and mechanical forces making up the remainder.

AMTRAK PTC OPERATION ON OTHER HOSTS' INFRASTRUCTURE

The second operating environment I would like to cover is where Amtrak is a tenant on other entities' infrastructure. Since Amtrak runs 72 percent of its train-miles over tracks owned and maintained by other railroads, we have spent a great deal of time and effort preparing for PTC operations on such areas. For the tracks we use but do not own or control, we are cooperating with our freight and commuter host railroads as they advance their obligations to complete PTC installations. In these models, Amtrak is responsible for the locomotive portion of the PTC system, which I have already addressed. We are currently interoperable with five hosts and we anticipate several more before the yearend deadline, although this is dependent on each host railroad's readiness.

In places where the host's PTC system is not anticipated to be ready for service by year's end, if they have made sufficient progress with installation, they will be able to apply for an alternative schedule. We anticipate this being the case on 37 segments across our route network. We have stayed in close contact with the various hosts to keep apprised of the status of their PTC installation work, and the best information we have now suggests that approved alternative schedules will be in place for all of the portions of the network where PTC is mandated by law and is not available on January 1, 2019. Additionally, the FRA permits railroads to seek Mainline Track Exclusion Addendums (MTEAs) if the operation meets certain criteria. An MTEA waives the requirement for a railroad to install PTC.

To prepare for operations where PTC is not in service, we have been conducting detailed risk assessments to enable us to develop an appropriate array of risk mitigation measures to address those areas that are not mitigated by a functional PTC system, consistent with our Safety Management System methodology. Starting in late spring, our safety team began a detailed, cross-departmental process of reviewing every portion of our network falling in one of two categories: places where an MTEA is present or places where we had reason to believe PTC is mandated but the railroads will qualify for an alternative schedule. Members of the safety team lead these assessments, ten of whom are dedicated to this process.

They work with their Engineering and Transportation colleagues to develop detailed profiles of each location under review, covering at least 2,100 miles of track. Each assessment defines the segment under review, with an emphasis on the physical characteristics of the territory, including elements such as curves, speed restrictions, and facing point switches. The assessments also address operational factors and local traffic volumes and traffic mixes. As the assessment is conducted, the team quantifies potential risks both in terms of likelihood of occurrence and the potential severity. The assessment team then develops operational and technological recommendations to reduce risk in the near, middle, and long-term, and works with Amtrak leadership to ensure there is a clear, organization-wide understanding of the results before any approvals are sought to adopt the recommendations. These assessments are being worked through as quickly as possible while ensuring the quality of the work, and those covering MTEA territory are slated to be complete by the end of October, with the rest by the end of the year. As this work is all above and beyond statutory requirements, the timing is driven by our own Safety Management System approach.

The central value of these assessments will be their role in determining what mitigations will be necessary to adopt for a given location over a given period to ensure Amtrak has a high degree of confidence in our ability to operate the safest possible railroad, short of the installation of PTC. We envision these potential mitigations in three tiers or layers.

The first is made up of changes to our operations, which may go beyond compliance with the host railroads' rulebooks to create a greater safety margin for our operations. These changes, most of which could be implemented almost immediately, could include reducing the maximum speed of our trains, further reducing speed when we approach facing point switches, or even changing the composition of our crews. In some cases, these changes may impose delays on our trains, but we believe that the additional level of safety is justified.

The second level of potential mitigations would be technological in nature but would take the form of relatively simple infrastructural changes that could be installed fairly quickly to add additional safety measures. Examples of such mitigations include warning signs for the crews, or new switch position indicators, both of which would provide additional situational awareness for our employees. The idea is to add these additional layers of mitigation to the system, which may then allow us to remove or minimize some of the more inconvenient operational mitigations we initially put in place.

The third and final layer of mitigations consists of more elaborate technological solutions that would take more time to develop and deploy. In many cases, we may determine that a full PTC system is the best long-term solution to strengthening safety on a given route. In other cases, we believe there may be various technologies, that when coupled with the other mitigations I have mentioned, could offer what we term “PTC equivalency” once they were ready. Many of the ideas in this category are in early stages, and still have significant operational and procedural issues that will need to be resolved. Nonetheless, we are determined to be open to innovative approaches to obtaining the benefits of PTC across all of our network.

While this risk analysis process and mitigation plan development is still underway, let me be clear that Amtrak’s goal is to continue to operate all of our services over all of our current routes come January 1, 2019. Exactly how we accomplish this will vary across our network, based on the specifics of each route, but I want to assure the committee that, at this time, we believe we will have strategies in place that will permit us to continue operations until operational PTC or PTC-equivalency is achieved for all of our network.

OTHER TENANTS’ PTC OPERATIONS ON AMTRAK-OWNED INFRASTRUCTURE

Third, there are several freight and commuter railroads that operate over Amtrak’s infrastructure, and for those railroads who may require an extension from the FRA, Amtrak is prepared to work collaboratively with the FRA and each railroad on a case-by-case basis with the aim of ensuring their continued, safe operations.

These various freight and commuter railroads that operate over our infrastructure must equip their rolling stock with PTC for use on our railroad and we are working cooperatively with them to advance these tasks. This cooperation, where applicable, primarily takes the form of linking our server system with the server systems of each tenant. Additionally, we then conduct interoperability field testing to verify the proper functioning of all the elements to enable both Amtrak and the tenant to develop confidence that the systems are working as intended.

Along the NEC, we have ten tenants that will use Amtrak’s ACSES PTC system, and another two tenants that will use the freight’s IETMS system. This is another example of how the PTC tasks facing Amtrak are complicated by the wide range of rail partners with whom we interface. Of the corridor, we also have one freight railroad that will operate over our tracks using both IETMS and ITCS, and three freight railroads and one commuter railroad that we host that will use IETMS only, so there are many different integrations that all must be verified for the whole network to be ready. Presently on the NEC, our tenants Connecticut DOT, CSX, MBTA, SEPTA, and the Providence & Worcester Railroad have completed implementation and are currently operating with fully functioning PTC on our routes. MARC and Norfolk Southern will both be IETMS ready, but it is not clear yet if everything for PTC operation will be in place before the deadline. Our sense is that NJ Transit has significant work facing it before it will be PTC operational.

Amtrak believes strongly in the value and importance of PTC and our aim is to ensure that all of our tenants have an operational system as soon as possible. Having said this, we are mindful of the impacts that any disruption of commuter service may have on the regions we serve and the potential safety consequences that could follow. Thus, Amtrak is continuing to work with any tenants who believe they may be at risk of not having fully completed the installation and commissioning of PTC equipment on their trains for use on our tracks. We will work with these carriers and the FRA to explore, through our Safety Management System process, the potential of risk mitigation strategies that could be applied in such situations until full installation and commissioning is achieved.

NEXT STEPS

Amtrak has worked for years to be ready for the upcoming PTC deadline. When 2019 arrives, we will have our track, computer, training, and locomotive PTC work complete and we will be operating PTC across all of the tracks we control and across much of the host railroad network. Already 222 of our 315 daily trains currently operate with PTC protection along some or all of their routes. On January 1, 2019, we anticipate that this number will climb to 283, or 90 percent, with only those portions of the network which have been granted an alternative schedule or an exemption by the FRA being without the protection of this system for our trains.

Having said that, given the docility of completing testing with so many freight and commuter partners and the potential for some limited technical issues to arise during testing of the sort that often accompany the initial operation of any complex technology, Amtrak will be required to submit an application to the FRA for an alternative schedule to enable us to continue operating while we finalize testing of our

system and the systems of our hosts and tenants. This alternative schedule is required due to the FRA's interpretation of the law that full implementation status cannot be achieved until all non-Amtrak trains operating on Amtrak's PTC-equipped lines are also PTC-compliant. However, to be considered fully implemented requires that all other railroads operating across any of Amtrak's PTC-equipped lines must be capable of operating with Amtrak's PTC system. This interoperability of PTC systems between railroads remains a work in progress and we are currently working with each railroad to assess this work, so we can determine the appropriate alternative schedule durations. In addition, as I mentioned, we will implement mitigation measures that we develop for all those areas which will not have operational PTC due to a host's alternative schedule of PTC exemption.

Strengthening safety is a continuous process. Amtrak's responsibility is to lead safety across our industry and serve as good stewards of the vital resources that we receive from Congress and the Administration to help us implement these advancements. Likewise, PTC is not a silver bullet and railroads alone cannot solve all of the safety issues that face us, such as grade crossing and trespasser accidents, which require a broader effort of local, State, and Federal stakeholders to educate motorists and pedestrians, better equip vulnerable crossings, limit public access to rights of way, and strengthen enforcement. Still, we are confident that achieving PTC or PTC-equivalent levels of safety across our network will be a major achievement in the safety performance of intercity passenger rail. One need look no further than our accident history to see the universal benefits that PTC can bring to Amtrak and our industry. We look forward to continuing to work with all of our partners to improve safety across the rail network.

CONCLUSION

I have the highest confidence in Amtrak's dedicated workforce and the commitment I see across our company to become the safest passenger railroad in North America. While the challenges described today are difficult, they can, and will, be overcome. At Amtrak, we owe our customers, and your constituents, nothing less.

Thank you for the opportunity to appear before you today, and I welcome your questions.

Mr. DENHAM. Thank you.

Mr. Hamberger, you are recognized for 5 minutes.

Mr. HAMBERGER. Chairman Shuster, Chairman Denham, Ranking Member DeFazio, Ranking Member Capuano, and members of the most important subcommittee in the House of Representatives, thank you for the opportunity to discuss Positive Train Control and progress on implementation across the U.S. rail network. My focus today is specifically on AAR's Class I freight railroad members, their significant progress to date, and the remaining technical and operational steps necessary to fully implement PTC nationwide.

Of course, a big piece of that task is establishing interoperability with Amtrak, as Mr. Naparstek has just outlined. I want to assure the committee that all hosts are working diligently with Amtrak to achieve just that.

Chairman Denham, your opening statement was spot on. This is a life-saving technology. But it is indeed complex and daunting. I am pleased to report that, on all fronts, the Class I railroads have made tremendous progress since this committee last convened on the topic in February of this year. At the end of July the vast majority of installation has been completed: 98.2 percent of locomotives; 99.2 percent of wayside interface units; 99.1 percent of radio towers, all equipped and installed. And, in addition, 99.8 percent of required employees have received their training.

Furthermore, by the end of July the Class I railroads already had in operation more than 37,000 route-miles, or nearly 70 percent of the 54,000 total required by law. PTC development has been an immensely complex undertaking from day one. From the start, railroads focused on developing and testing technology that

would meet the RSIA requirements, especially nationwide interoperability. This required developing essential software and hardware. Once developed, rigorous and repeated testing is the only way to ensure this system works as intended.

In addition to initial testing in a simulated environment, these components must be installed and exposed to day-to-day operations to verify that each individual part, and the system as a whole, will function properly under real-world conditions. And as Scot has just pointed out, those real-world conditions can be very challenging, as we are seeing in the Carolinas today. The freight rails operating there are working with emergency responders and the Governors to be ready to move in and help in the aftermath after Hurricane Florence hits.

In addition, failure of a single PTC component can mean that the system shuts down a train unexpectedly and unnecessarily. When that happens it means trains are not able to operate normally on affected rail lines until the failure is corrected: a situation railroads are currently facing as PTC is rolled out.

Additionally, it is common for one railroad's locomotives to operate on another railroad's tracks. Therefore, PTC systems must be fully interoperable across all the Nation's major railroads, adding yet another layer of complexity. Ensuring this interoperability is the largest step left to full PTC implementation. Class I railroads are up to the task, making consistent progress, and continuing to resolve issues as they arise.

In the future, by the end of 2018, each Class I railroad will have completed PTC installation. One hundred percent of wayside, back office, and locomotive hardware will be installed. One hundred percent of spectrum will be in place, and 100 percent of required employee training will be complete.

In addition, it is projected by the end of this year 80 percent of Class I route-miles will be in operation under PTC. This compares to the target established by Congress in 2015 of 50 percent.

While some Class I railroads plan to be fully operational by the end of the year, all Class I railroads will be 100 percent implemented no time later than some time in 2020.

As Mr. Naparstek has pointed out, even if a railroad will have PTC fully operational on its network by the end of this year, FRA will not consider the railroad to be fully implemented until all railroads, the host, and all of its tenants are fully interoperable.

The bottom line is that every day, as railroads finalize the PTC installation and expand PTC operations, the risk of accidents on the Nation's rail network is reduced, passengers move more safely, and employees operate in a safer environment. Thank you.

[Mr. Hamberger's prepared statement follows:]

**Prepared Statement of Edward R. Hamberger, President and Chief
Executive Officer, Association of American Railroads**

On behalf of the Association of American Railroads (AAR), thank you for the opportunity to discuss positive train control (PTC). AAR members account for the vast majority of North American freight railroad mileage, employees, and revenue.

In this testimony, I will review the progress freight railroads have made in the development and implementation of PTC and what to expect going forward. My focus will be on Class I freight railroads and their PTC-related status.

The bottom line is that by December 31, 2018, all Class I's will have completed PTC hardware installation, trained all employees, and secured all needed radio bandwidth. Further, by the end of this year, PTC will be in operation on the vast majority—approximately 80 percent—of Class I PTC route-miles network wide, with some Class I railroads planning to be fully operational on their networks. Between 2018 and 2020, all Class I railroads will be completing PTC implementation, consistent with the statute. All railroads will continue their work on resolving technical operational challenges that will inevitably rise, which Congress anticipated and specifically provided flexibility for in its 2015 law. They also will be addressing the biggest remaining challenge of PTC implementation: interoperability with each other and with their tenant passenger and shortline railroads.

WHAT IS POSITIVE TRAIN CONTROL?

As members of this committee know, “positive train control” (PTC) describes technologies designed to automatically stop a train before certain accidents caused by human error occur. Under the Rail Safety Improvement Act of 2008 (RSIA), passenger railroads and Class I freight railroads are required to install PTC on main lines used to transport passengers or toxic-by-inhalation (TIH) materials.

Specifically, PTC as mandated by the RSIA must be designed to prevent four major types of train accidents: train-to-train collisions; derailments caused by excessive speed; unauthorized incursions by trains onto sections of track where maintenance activities are taking place; and the movement of a train through a track switch left in the wrong position.¹ The PTC system now being installed to meet this statutory mandate is an overlay system, and meant to supplement, rather than replace, existing methods of operation.

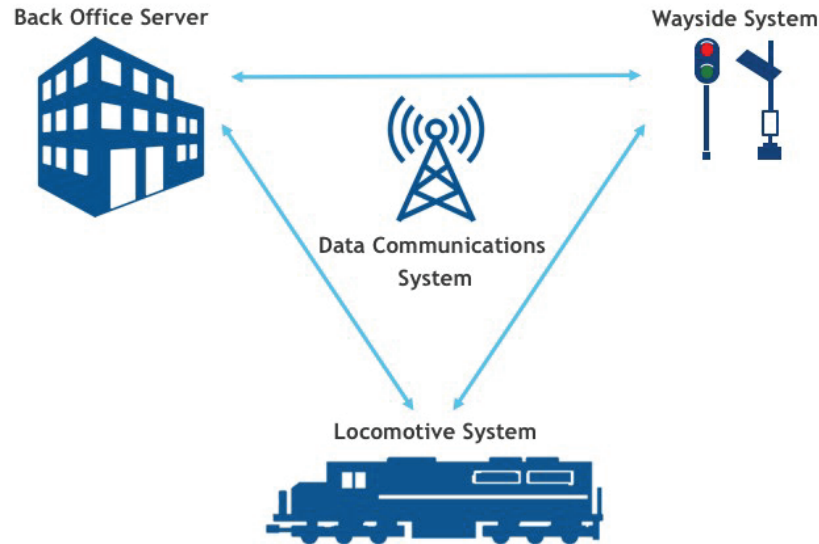
To work as it should, a PTC system must be able to determine the precise location, direction, and speed of trains; warn train operators of potential problems; and take immediate action if the operator fails to act after a warning is provided by the PTC system. For example, if a train operator fails to begin stopping a train before a stop signal or slowing down for a speed-restricted area, the PTC system will override the operator and apply the brakes automatically before the train passes the stop signal or enters the speed-restricted area.

A PTC system consists of three main elements that are integrated by a fourth critical element, the wireless data communications system. An onboard or locomotive system monitors a train's position and speed and activates braking as necessary to enforce speed restrictions and unauthorized train movements; a wayside system monitors railroad track signals, switches, and track circuits to communicate data on this local infrastructure needed to permit the onboard system to authorize movement of a locomotive; and a back office server stores all information related to the rail network and trains operating across it (e.g., speed restrictions, movement authorities, train compositions, etc.) and transmits this information to individual locomotive onboard enforcement systems. Finally, all of these segments of the PTC system are integrated by a wireless data communications system that must move massive amounts of information back and forth between the back-office servers, the wayside equipment, and the locomotives' on-board computers.

¹ A switch is the infrastructure that controls the path of trains where two sets of tracks diverge or converge.

PTC SYSTEM INTERACTIONS

Each segment requires highly complex technologies and information processing capabilities.



Such a system requires highly complex technologies able to analyze and incorporate the huge number of variables that affect train operations. A simple example: the length of time it takes to stop a freight train depends on train speed, terrain, the weight and length of the train, the number and distribution of locomotives and loaded and empty freight cars on the train, and other factors. During the operation of a single train over a single operating segment of track known as a sub-division, the length of time and the distance needed to stop that train may change 100 or more times due to changes in the factors mentioned above. A PTC system must be able to take all of these factors into account automatically, reliably, accurately, and in real time in order to safely stop the train wherever it may be along its route.

PTC IS AN UNPRECEDENTED TECHNOLOGICAL CHALLENGE

PTC development and implementation constitute an unprecedented technological challenge. Some of the development and installation tasks associated with the Class I railroads' efforts over the past few years include:

- A complete physical survey and highly precise geo-mapping of the approximately 54,000 route-miles on which PTC technology will be installed, including more than 450,000 field assets along the right-of-way (e.g., mileposts, curves, rail and highway grade crossings, switches, signals, track vertical profiles and horizontal geometry).
- Installing more than 28,000 custom-designed "wayside interface units" (WIU) that provide the mechanism for transmitting information from signal and switch locations along the right-of-way to locomotives and railroad facilities.
- Installing PTC technology on nearly 16,400 Class I locomotives.²
- Installing PTC technology on nearly 2,100 switches in non-signaled territory and completing signal replacement projects, including upgrades to PTC-compatible signal technology, at some 14,500 locations.

² As just one example of the magnitude of the PTC implementation effort, it takes about one person working for about 1 month to install all of the necessary PTC equipment on a single locomotive. It will take approximately 1,400 staff-years to install PTC on all of the Class I locomotives that require it.

- Developing, producing, and deploying a new radio system specifically designed for the massive data transmission requirements of PTC at tens of thousands of base stations and trackside locations, and on nearly 16,400 locomotives.
- Developing back office systems and upgrading and integrating dispatching software to incorporate the data and precision required for PTC systems.

In all these areas, Class I railroads have already made tremendous progress. Figure 2 has details on the status of Class I PTC installations at the end of July 2018.

FIGURE 2
CLASS I FREIGHT RAILROAD PTC INSTALLATION AS OF JULY 31, 2018

Locomotives			Wayside Interface Units		
Equipped and PTC Operable	Required for PTC Operation	% Complete	Installed	Required	% Complete
16,077	16,375	98.2%	27,657	28,083	99.2%
Employees			Radio Towers		
Trained	Require Training	% Complete	Installed	Required	% Complete
91,826	92,694	99.1%	14,895	14,928	99.8%

Source: AAR compilation of figures provided by individual Class I railroads

Additionally, as shown in Figure 3, at the end of July 2018, the Class I railroads already had in operation more than 37,000 route-miles, or nearly 70 percent, of the approximately 54,000 route-miles that will eventually be equipped with PTC. To be clear, each Class I railroad will install 100 percent of PTC wayside, back office, and locomotive hardware, and complete all required employee training, by the end of 2018 and expect to have nearly 80 percent of required PTC route-miles operational by the end of 2018.

FIGURE 3
CLASS I FREIGHT RAILROAD PTC IN OPERATION AS OF JULY 31, 2018

Miles		
In PTC Operation	Required for PTC Operation	% Complete
37,435	53,713	69.7%

Source: AAR compilation of figures provided individual Class I railroads

The AAR estimates that, as of today, freight railroads together have spent more than \$10 billion—of their own funds, not taxpayer funds—on PTC development and deployment, and expect to spend more than \$11 billion by the time PTC is fully operational nationwide. This does not include the hundreds of millions of additional dollars that will be needed each year to maintain the railroads' PTC systems once they are initially installed.

TESTING AND VALIDATION IS ESSENTIAL FOR SAFE OPERATION AND FULL INTEROPERABILITY

From the outset, railroads' efforts were focused on development and testing of technology that could meet the requirements of the RSIA, particularly those related to interoperability, and that could be scaled to the huge requirements of a nationwide system. Essential software and hardware for many PTC components had to be developed and deployed, and then rigorously tested. Only after technology is actually installed and exposed to the rigors of day-to-day operations can the task of testing each of the individual parts, and the system as a whole, be completed under real world conditions.

This task is made particularly complex by the need to ensure that PTC systems are fully and seamlessly interoperable across all of the nation's major railroads. It is not unusual for one railroad's locomotives to operate on another railroad's tracks. When that happens, the "tenant" locomotives must be able to communicate with, and respond to conditions on, the "host" PTC system. Put another way, a CSX locomotive must behave like a Norfolk Southern locomotive when it is traveling on NS track; a BNSF locomotive must be compatible with Union Pacific's PTC system when it is on UP track; and so on. All the while, each railroad has its own operating rules designed to address specific conditions on its property, all consistent with FRA regulations, but further adding to this complexity. Ensuring this interoperability has been a significant challenge.

It is critical that any and all potential failure points be identified, isolated, and corrected. By necessity, a mature, well-functioning PTC system is enormously complex, and it is not realistic to think it will perform flawlessly day in and day out, especially upon initial implementation. That is precisely why testing, first in a simulated environment and then under real-world operating conditions, is so important. Unfortunately, the failure of a single part within a complex PTC system can mean that the system—designed to be fail safe—shuts down a train unexpectedly and unnecessarily. When that happens, it means that trains are not able to operate normally on affected rail lines until the failure is corrected, a situation railroads are facing today as they proceed toward PTC implementation.

Every day, as railroads finalize their PTC installation and expand PTC operations, the risk of accidents is lowered. However, as other train control systems implemented in other countries demonstrate, there is risk in improperly designed, installed, or operated PTC systems. This is not just a speculative concern. Since 2008, there have been a number of incidents worldwide in which accidents resulting in deaths and injuries occurred on rail lines that had PTC-like systems. These concerns make it essential that a railroad's first priority must be to implement PTC correctly, and to test and validate it thoroughly.

CONCLUSION

Railroads have devoted enormous human and financial resources to develop a functioning and reliable PTC system, and progress to date has been substantial. Class I railroads remain committed to safely implementing PTC as quickly as possible. By the end of 2018, each Class I railroad will have PTC fully operational or initiated revenue service demonstration on, at a minimum, 51 percent of its required PTC route-miles or subdivisions; have 100 percent of the necessary wayside, back office, and locomotive hardware installations completed; have all required spectrum in place; and have all required employee training completed.

In addition, network-wide approximately 80 percent of required PTC route-miles are expected to be operational by the end of 2018. While some Class I railroads plan to be fully operational by the end of this year, all Class I railroads will be fully implemented no later than 2020. In the meantime, Class I railroads will continue to work with each other and their tenant passenger and shortline railroad partners to successfully achieve full interoperability, which is the largest remaining challenge to a fully implemented national PTC system.

Mr. DENHAM. Thank you, Mr. Hamberger.

Mr. Knueppel?

Mr. KNUEPPEL. Good morning, Chairman Denham, Chairman Shuster, Ranking Member Capuano, Ranking Member DeFazio, and members of the Subcommittee on Railroads, Pipelines, and Hazardous Materials. On behalf of the American Public Transportation Association, thank you for the opportunity to testify on the state of Positive Train Control implementation in the United States.

My name is Jeffrey Knueppel. I am a professional engineer, and serve as the general manager of the Southeastern Pennsylvania Transportation Authority, or SEPTA, the Nation's sixth-largest system, providing more than 1 million daily trips throughout southeastern Pennsylvania. I am also chair of APTA's Commuter Rail PTC Subcommittee.

As we sadly recognize the 10th anniversary of the tragic Chatsworth accident this week, I want to begin by reiterating

APTA's and the commuter rail industry's commitment to implementing Positive Train Control.

The Nation's commuter railroads have been working continuously with our freight partners, third-party contractors, Amtrak, and the FRA to address financial, technological, and logistical challenges as the industry works towards a common goal: implementing positive train control and making an already safe system even safer. And I would like to note that it is 18 times safer to take the train than drive.

Since APTA last testified before this subcommittee in February, commuter railroads have continued to make strong progress. This improvement is reflected in the FRA's second-quarter PTC progress report, including reducing by two the number of commuter railroads on FRA's list of at-risk railroads. And we expect the number of at-risk railroads to continue to drop.

Although no two PTC experiences are the same, I offer the SEPTA story as a positive outcome based on a good plan, a supportive board, and some good circumstances. I kind of break our PTC efforts down into three stages: the first one was construction and testing; our plan was to do the work with both in-house forces, as well as contractors. So our in-house forces installed automatic train control, while third-party forces placed the access overlay on top of that system.

We also had a particular situation with CSX, where both railroads wanted to run their form of PTC, and so we performed a separation project that was completed over a 6-mile stretch in August of 2015. And I would like to note that we really appreciate the TIGER funds that were utilized for that work.

Stage 2 was placing routes and provisional revenue service. And we began in April of 2016 to start placing our lines in revenue service, and we did that first on our Warminster line, which is single-track line. We incrementally rolled out one or two lines a month in our territory, until January of 2017. At that point we intensified our field testing efforts on Amtrak, and ran from January until May of 2017, when we began operation with PTC on our three Amtrak territory lines.

So since May of 2017, all 13 lines have been continuously operated with PTC. That is SEPTA vehicles. And that leads to stage 3, where we are at right now, and that is interoperability. This significant challenge remains. CSX and Norfolk Southern are scheduled to be completed by the end of the year, but this could be a photo finish for one of the carriers.

It has not been easy, even though our progress appears strong along the way. Funding was very difficult for SEPTA. The economic collapse of 2008 and other circumstances put us at our lowest historical capital funds. Fortunately, in our State, Act 89 was passed, which helped SEPTA through a tough time. Employee retention and continuity was a challenge. A limited vendor base. There were countless innovations needed to overcome technological hurdles at various points, car shortages during our equipment installation, endless testing, a formidable training effort. We did experience a very significant radio interference issue with freight carriers. There was, obviously, startup inertia and struggles, and poor on-time performance until schedule changes could be made.

But we persevered through this. We have spent \$344 million on this project, and I am proud of the efforts of our entire organization.

Thank you for this opportunity to testify on the challenges and the successes of implementing this critical safety system, and I look forward to answering any questions that you may have.

[Mr. Knueppel's prepared statement follows:]

Prepared Statement of Jeffrey D. Knueppel, P.E., General Manager, Southeastern Pennsylvania Transportation Authority, on behalf of the American Public Transportation Association

The American Public Transportation Association is a non-profit international association of more than 1,500 public and private-sector member organizations, including public transit systems and high-speed, intercity, and commuter rail passenger 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 Subcommittee on Railroads, Pipelines, and Hazardous Materials, on behalf of the American Public Transportation Association (APTA) and its more than 1,500 public and private-sector member organizations, thank you for the opportunity to testify on the state of positive train control (PTC) implementation in the United States.

My name is Jeffrey D. Knueppel, P.E., and I am the General Manager of the Southeastern Pennsylvania Transportation Authority (SEPTA). SEPTA is the nation's six largest transit system, with more than 9,000 employees. We provide more than 1.1 million daily passenger trips through an extensive network of fixed-route services including bus, subway, trolley, and Regional Rail, as well as ADA paratransit and shared ride services that serve Philadelphia, Bucks, Chester, and Montgomery Counties in Pennsylvania. SEPTA's commuter rail system (Regional Rail) is a network of 13 rail lines with 155 stations that provides service to and from Center City Philadelphia and the rest of southeastern Pennsylvania, as well as service into New Jersey and Delaware. We operate 770 weekday trains and serve more than 34 million riders each year, and Regional Rail ridership has increased by more than 50 percent over the last 20 years. I also serve as Chair of APTA's Commuter Rail PTC Subcommittee.

As we sadly recognize the 10th anniversary of the tragic Chatsworth accident this week, I want to begin by reiterating APTA's and the commuter rail industry's longstanding and unwavering commitment to implementing positive train control.

I am pleased to be working with APTA and representing the industry in this important effort. Since APTA last testified before this subcommittee in February, the nation's commuter railroads have continued to make strong and continuous progress in installing and implementing positive train control. This progress is reflected in the Federal Railroad Administration's (FRA) recently released second quarter PTC Progress report, including reducing by two the number of commuter railroads on FRA's list of at-risk railroads.

The commuter rail industry has been working continuously with freight partners, third-party contractors, Amtrak, and FRA to implement PTC and address and correct technical and interoperability challenges. APTA has also provided a number of forums for collaboration and the sharing of best practices and lessons learned, including the PTC Subcommittee, which has been particularly helpful in providing a cohesive push as the industry works toward a common goal—implementing PTC and making an already safe system even safer.

We greatly appreciate the subcommittee's focused attention on the critical issues of rail safety and PTC, and the challenges and successes that publicly funded commuter railroads have experienced in procuring, installing, and implementing this complex signaling and communications technology.

SAFETY IS OUR FIRST PRIORITY

For commuter rail operators and the entire public transportation industry, safety is our first priority. Safety is not simply a value we share; it is a core operating

principle and a promise to our riders. 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.

Moreover, throughout our 136-year history, APTA and its predecessor associations have been leading advocates for safety improvements. As APTA President and CEO Paul Skoutelas outlined in his testimony before the subcommittee in February, APTA and its members have led the way in creating an effective safety culture over many decades:

- creating a Rail Safety Audit Program;
- developing Safety Management Program Plans; and
- writing more than 270 standards and recommended practices for public transit, including Passenger Rail Equipment Safety Standards (PRESS) for commuter rail cars.

APTA's PRESS standards help improve the safety of public transportation systems by specifying safety requirements for 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.

With regard to positive train control, APTA publicly supported the concept of PTC prior to enactment of the Rail Safety Improvement Act of 2008 (RSIA), and we advised Members of Congress and other policymakers of the need for proven technology, adequate resources, and the expanded radio spectrum necessary to put PTC into operation. Since enactment of RSIA, APTA has actively worked to assist the commuter rail industry with PTC research, development, installation, and implementation, including by participating in FRA's Rail Safety Advisory Committee (RSAC); establishing "user groups" among different types of commuter rail operators to share information and encourage coordinated actions; and conducting PTC conferences, workshops, and summits with commuter rail Chief Executive Officers, senior engineering staff, FRA senior staff, and congressional staff.

As a result of this overriding and sustained commitment to safety, today, public transit is the safest form of surface transportation. Every year, 30 commuter railroads across America safely carry passengers on more than 500 million trips. And traveling by commuter and intercity passenger rail is 18 times safer than traveling by car.

POSITIVE TRAIN CONTROL MANDATE

Moreover, we are working to make commuter rail even safer by installing and implementing PTC, a complex signaling and communications technology that provides a critical safety overlay on top of already safe commuter rail systems.

In 2015, Congress recognized the implementation challenges that the Government Accountability Office had outlined since RSIA implementing regulations went into effect. In enacting the Positive Train Control Enforcement and Implementation Act of 2015, Congress identified specific installation and implementation milestones. Under current law (49 U.S.C. 20157), commuter railroads are required to implement PTC by December 31, 2018, or, alternatively, to meet the following milestones (as defined in 49 U.S.C. 20157(a)(3)(B)) by that date:

- Installed all PTC hardware (wayside and onboard equipment);
- Acquired all necessary spectrum for PTC implementation;
- Completed all employee training required under the applicable PTC system regulations;
- Initiated revenue service demonstration (RSD) on at least one territory subject to the PTC requirement (or other criteria); and
- Submitted a plan, schedule, and certification to the Secretary of Transportation for implementing a PTC system.

Upon reaching these milestones by the end of 2018, the commuter railroads must implement PTC as soon as practicable, and no later than December 31, 2020.

APTA supports these statutory deadlines and is committed to assisting all our commuter railroads in implementing PTC.

PTC: UNPARALLELED TECHNOLOGICAL CHALLENGE

As defined in 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."

Implementing PTC requires changes to four main system components—vehicles, communications, signals, and the back office/control center—and each has to be fully functioning and integrated with the other systems.

When RSIA was enacted in 2008, there was no universal off-the-shelf technology capable of achieving these safety objectives. Although many commuter railroads have long used collision avoidance systems to help protect against certain accidents, these systems did not have all of the required attributes of PTC. Since the enactment of RSIA, APTA and its member commuter railroads have aggressively pursued both the funding and technology necessary to implement the PTC mandate by the statutory deadlines.

PTC is a predictive enforcement system of subsystems overlaid on existing systems. Although 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 specific operating requirements.

For instance, commuter railroads interoperating with freight railroads typically use a variant of PTC called I-ETMS. Railroads that operate on the Northeast Corridor are installing an Amtrak-developed system known as ACSES. Railroads without extensive freight interoperability requirements may use a different PTC variant called E-ATC.¹ As such, what works for one commuter railroad may not work for another. Thus, 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 creates uncertainty about whether a new solution will work as intended.

In general, the following components are required for implementation of PTC:

Locomotive Hardware

All locomotives and other operating equipment must be fitted with onboard computers, radios, display units, and event recorders. Numerous configurations of commuter rail equipment are in service including self-propelled cars and push-pull equipment adding to the complexity and cost of deploying these onboard systems.

Wayside Hardware

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. The status of the components is transmitted via WIUs to the locomotive to enable the PTC system to take action as necessary.

Communications (Spectrum and Towers)

PTC implementation typically requires a robust wireless infrastructure that is used for transmission of data between the various subsystems including the onboard, wayside, and back office equipment. The communications architecture includes data radios, antennas, wayside towers, and spectrum.² After enactment of RSIA, many commuter railroads chose to adopt the PTC protocol developed for freight railroads or intercity passenger (Amtrak) operations instead of investing the time and money to develop their own PTC protocol.

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, and train compositions) and transmits the authorization for individual trains to move into new track segments. Operating PTC on commuter railroads presents a variety of back

¹ PTC is deployed by commuter railroads in three basic forms:

- I-ETMSTM (Interoperable-Electronic Train Management System): In general, railroads that share track with freight railroads are installing and implementing a system known as I-ETMS, a GPS-based technology heavily dependent on the nationwide 220 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 freight railroads. FRA granted type approval to I-ETMS on February 4, 2015.
- ACSES (Advanced Civil Speed Enforcement System): In general, railroads that operate on the Northeast Corridor are installing and implementing an Amtrak-developed system known as ACSES, which uses track-mounted transponders to deliver information to the locomotive. ACSES monitors actions of the train operator and intervenes if safety is compromised. It facilitates interoperability among operators on the Northeast Corridor. FRA granted type approvals to ACSES variants between 2010 and 2013.
- E-ATC (Enhanced Automatic Train Control): In general, small commuter railroads that do not require complex interoperability with other operators are installing and implementing E-ATC, a track circuit-based system that is less complex and therefore less expensive than either I-ETMS or ACSES. FRA granted type approval to E-ATC on March 11, 2016.

² Some commuter railroads' PTC systems do not require spectrum and use track-based circuits to communicate data between the onboard and wayside equipment.

office requirements. Railroads that dispatch trains need to invest in a complete set of upgraded dispatch systems and Back Office Servers.

Employee Training

All employees who perform dispatch, operations, and signaling, as well as roadway workers and supervisors, must be trained and are essential for successful PTC implementation and operation. The commuter rail industry must train approximately 15,000 employees for full PTC operations.

PTC IMPLEMENTATION PROGRESS

Commuter railroads are making strong and continuous progress in implementing positive train control. These railroads have faced, and continue to face, a variety of complex challenges in implementing PTC including financial, technological, and logistical challenges. Some commuter railroads have overcome these significant hurdles, but other railroads continue to grapple with PTC implementation issues. Moreover, these railroads are faced with installing, testing, and implementing PTC on an enormous and complicated network of interconnected railroads while still providing daily service to millions of Americans, in and around many of our nation's most important metropolitan regions.

The commuter rail industry continues to make substantial progress in implementing PTC according to updated analyses conducted by APTA, and as of June 30, 2018:

- 91 percent of spectrum has been acquired;
- 85 percent of 13,698 pieces of onboard equipment have been installed on locomotives, cab cars, etc.;
- 79 percent of 14,083 wayside (on-track equipment) installations have been completed;
- 78 percent of back office control systems are ready for operation;
- 74 percent of 14,847 employees have been trained in PTC; and
- 34 percent of commuter railroads are in testing or revenue service demonstration; or service is fully operational.

These percentages represent significant increases from the status of PTC implementation on commuter railroads compared to 6 months ago (the end of calendar year 2017).

OVERCOMING CHALLENGES TO PTC IMPLEMENTATION

Total Cost—More than \$4 Billion

PTC will cost commuter rail operators approximately \$4.1 billion to implement, and an estimated additional \$80 million to \$130 million each year to operate and maintain. For publicly funded agencies that rely on Federal, State, and local funding, as well as passenger fares to operate their service, these costs are staggering.

Moreover, 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, as estimated by the U.S. Department of Transportation. A recent survey of 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. As a result, to fund PTC, commuter railroads have had to divert funds from other critical infrastructure and safety projects, such as replacing bridges (some of which that are more than 100 years old), rehabilitating outdated locomotives, and upgrading tracks and safety systems.

Limited Federal Funding

The enactment of RSIA coincided with the 2008 global financial crisis and a multi-year period of short-term SAFETEA-LU extension acts and transportation appropriations continuing resolutions making it difficult for public transit agencies to plan and fund major projects like PTC. Since Congress mandated PTC, the Federal Government has directly provided barely one-tenth (\$435 million) of the necessary funding for commuter railroads to implement PTC. Moreover, more than 80 percent of this funding (\$360 million) has only been awarded in the last 16 months (since May 2017). In addition, two commuter rail operators have also secured Federal loans to help pay for PTC implementation. While this financing has been helpful, the burden of repaying these loans still falls on public agencies that are already under financial pressure.

We urge Congress and the administration to consider these costs and provide additional funding to enable publicly funded commuter railroads to quickly implement, operate, and maintain PTC, as well as address the massive backlog of other deferred critical infrastructure and safety projects. Additional funding would not only help

commuter railroads continue to achieve the necessary milestones to implement PTC, but it would also allow them to address critical and costly interoperability challenges and system-wide reliability improvements after PTC deployment. As previously noted, the annual ongoing cost of PTC for publicly funded commuter railroads is estimated to be between \$80 million and \$130 million.

Limited Vendors and Expertise

PTC is specialized rail signaling and communications equipment and there are a very limited number of manufacturers of this technology. A limited number of PTC-qualified vendors are simultaneously in demand by freight, intercity passenger, and commuter rail operators to develop, design, and test this complex safety technology, and it has been a significant challenge for the industry. In addition, the procurement process employed by public transit agencies is more rigorous and time intensive, which hindered some agencies' ability to advance contracts. Moreover, the scale of large freight railroad PTC procurements made it difficult for commuter railroads, which typically contract for much smaller procurements, to compete in the limited market.

Installing and commissioning PTC requires highly qualified signaling, communications, and software engineers. Workforce development is a critical issue in public transportation generally. With so many railroads implementing PTC at the same time, worker retirements and limited available expertise in the specialized communications and signaling fields, where institutional knowledge is crucial, has taxed the nationwide implementation effort.

Communications (Spectrum and Towers)

Many commuter railroads have also faced significant issues in accessing and acquiring the necessary radio spectrum. Railroads often 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.

Commuter railroads also may be subject to contractual constraints imposed by State and local governments. For instance, receiving government approval to use a sole-source procurement to acquire spectrum can take a very long period of time.

Finally, after spectrum is acquired, commuter rail PTC systems are also subject to radio interference from freight railroads operating on or near commuter rail territory that can overwhelm commuter rail PTC signals and render the system vulnerable to failure. Complex, and sometimes costly, solutions must be developed to mitigate this operational problem.

Equipment Installation and Training

Commuter railroads do not have surplus equipment or personnel, and the impact of PTC implementation on daily service has been significant. It is extremely difficult to operate the level of service that our customers rely upon when railroads must remove railcars and personnel from service for onboard equipment installation and training and work on multiple territories simultaneously.

Most locomotives and other operating equipment must be reconfigured to accommodate the installation of PTC components, which has led to higher costs and longer schedules to implement PTC than initially predicted. To provide an example of the level of effort required to install this hardware, it generally takes one person working for one complete month to equip one locomotive or similar controlling equipment. Moreover, this example does not take into account the design and proof-of-concept work that is needed prior to equipage. Similarly, many railroads must upgrade track components such as switches and signals to be reported by the Wayside Interface Units. Commuter railroads face the same challenges in equipping the wayside components as private-sector freight railroads, but with far more limited development and testing resources.

In addition, railroads installing I-ETMS must maintain extensive back office capability to interact with the overall PTC network. Recognizing this requirement as a key resource constraint for commuter railroads, APTA, in conjunction with FRA, worked with suppliers to develop a cloud-based back office system. In 2015, FRA provided approximately \$5 million 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.

Interoperability

Commuter railroads face different operating environments. Railroads operate as hosts on tracks they own, as tenants on other railroads tracks (e.g., freight rail-

roads, Amtrak), or a combination of the two environments. PTC must have the ability to interface and function with different operators that share use of a section of track. In metropolitan areas, several different carriers often operate on one section of track. For instance, Metra, a Chicago-area commuter rail operator, has 13 required rail partners for its service area. Moreover, interoperability requirements are very complex for both testing and implementation. It continues to be a challenge to ensure compatibility and requires close coordination and communication between host and tenant railroads. Commuter railroads continue to diagnose and resolve software issues and address complex interoperability issues as they begin testing the system in RSD.

Overall, there are 30 commuter railroads vying for a limited number of resources related to PTC. As you can imagine, the systems are at various stages of the process. It is important to note that commuter railroads must continue to serve their customers during this process. Each day, systems must delicately balance PTC installation and serving their customers as they work to continue to safely carry passengers on more than 500 million trips per year.

SEPTA'S EXPERIENCE IMPLEMENTING PTC

Finally, I would like to outline SEPTA's experience implementing PTC. Despite a period of historically low capital funding at the Authority, our Board was committed to implementing PTC. The Board's support, coupled with proactive decision-making and planning, and some good circumstances, combined to drive SEPTA's PTC implementation efforts. Following our implementation plan, SEPTA received FRA approval to operate ACSES II PTC provisional revenue service on our Warminster Line in April 2016, and SEPTA commuter trains have been operating under PTC on all 13 of its Regional Rail Lines since May 1, 2017.

SEPTA began designing its PTC system in November 2009 without really knowing how we were going to pay for it, but we were fortunate to have several circumstances fall into place, and we were positioned to take action, including:

- In 2013, SEPTA received a \$10 million U.S. Department of Transportation TIGER Grant and worked with CSX to physically separate freight and commuter rail operations to address PTC interoperability in a congested corridor where SEPTA's West Trenton Line operated over the freight carrier's Trenton branch.
- Counter to industry trends, we had a qualified and highly skilled in-house team that remained intact throughout implementation; and
- Most importantly, at the end of 2013, Pennsylvania enacted Act 89—Pennsylvania's landmark multi-modal transportation funding bill—which gave SEPTA a future, doubling our annual capital program. The bill provided critical funding to allow SEPTA to begin to address its \$5 billion state-of-good-repair backlog while making it possible for SEPTA to aggressively finish PTC implementation.

Without Act 89, and the other good circumstances, SEPTA's PTC story would be very different.

Implementing PTC at SEPTA has required a series of innovative solutions to myriad challenges—cost, limited Federal funding, interoperability, radio spectrum, equipment installation and training, and a limited number of qualified vendors to accommodate the simultaneous, industry-wide implementation of PTC. SEPTA's in-house team has distinguished themselves in responding to the complexities of implementing a new safety system across our extensive network in a finite period of time and maximizing opportunities to install, test, and implement our system. But we would not have been able to execute our plan without close and productive working relationships with Amtrak, CSX and Norfolk Southern, our third-party contractor Hitachi (formerly Ansaldo), and the Federal Railroad Administration.

At a total project cost of more than \$344 million, completing the installation of PTC for a system as large and complex as SEPTA was, and continues to be, a hard and challenging project. After working through a number of technical and operational challenges, SEPTA continues to address interoperability with freight tenants operating on various segments of our territory.

To date, SEPTA has already invested more than \$337 million to implement PTC, following a strategic approach:

- successfully separating SEPTA from CSX on the West Trenton Line;
- systematically rolling out PTC on SEPTA territory beginning in April 2016 and completing PTC implementation on 12 distinct segments by January 2017; and
- activating PTC on the three lines that operate on Amtrak-owned track on May 1, 2017.

SEPTA is proud of its record implementing PTC for our customers and employees, and yet we still have work to do.

With three major phases completed, and with SEPTA trains operating with PTC on all 13 Regional Rail Lines, the final major focus is completing the task of establishing interoperability with the freight lines—CSX and Norfolk Southern—operating along portions of SEPTA territory. Working with our freight partners, this phase of the program is scheduled to be completed by December 2018.

Although we have had success in our implementation efforts, no two commuter railroads are the same—each has different operating environments, equipment, host-tenant relationships, and ridership—so no two PTC experiences are going to be alike. What we do have in common, though, is a commitment to safety and implementing PTC on our systems. That commitment is shared by our employees—who embraced SEPTA’s PTC efforts during training and installation and now in revenue service—and our customers—who experienced schedule adjustments and service changes during implementation. SEPTA’s PTC effort would not be where it is without their professionalism and patience.

CONCLUSION

Safety is the shared responsibility of every commuter railroad in the country, and the current nationwide effort to implement positive train control is a critical initiative that reflects the industry’s commitment to strengthening safety. The nation’s commuter railroads are aggressively working to implement PTC by the statutory deadlines, and right now, thousands of workers across the country are working trackside or in back offices to make that happen.

APTA is grateful for the work that this subcommittee has done to make our nation’s railroads safer. We look forward to continuing to work with you and your staff on this and many other issues that face public transportation agencies.

Mr. SHUSTER [presiding]. Thank you, Mr. Knueppel.

And now, Ms. Mortensen, you are recognized for 5 minutes.

Ms. MORTENSEN. Chairmen Shuster and Denham, Ranking Members DeFazio and Capuano, and members of the subcommittee, thank you for holding this important hearing and inviting me to testify about our experience implementing PTC on the smallest commuter rail service in the country.

First of all, I want to note our sincere appreciation for our congressional delegation for our service area, especially the ones who serve on the House T&I Committee. Chairman Denham, and Representatives DeSaulnier and Garamendi have done a fantastic job for our constituents, and we are very fortunate to have them on this committee.

Second, I also want to thank the Class I railroads who are our hosts for both our ACE service, which I will talk about today, and the San Joaquins Amtrak service, which we manage. They have been incredibly collaborative and helpful to us on the PTC, as well as our goals to expand services out in northern California.

Just a brief bit about our agency. We operate under a consolidated staffing model that allows us to be very agile. We are a very, very small agency, and we manage both the ACE commuter rail and the Amtrak San Joaquins. And we throw our heart and soul into both. We have two policy boards that can take care of the constituents in each of the communities, but we share one staffing so that we can leverage opportunities, have very good cost controls and cost efficiencies, and bring more rail service, regardless of whether it is intercity or commuter, to the communities that we serve.

The Amtrak San Joaquins run up and down the spine of California, north and south, and our ACE trains connect that spine from the Central Valley into the bay area. Our small rail commission is headquartered in Stockton, in San Joaquin County. And

while we don't have very large budgets, we really make the most of what we have with our local partners.

Our State just gave us a big vote of confidence in investing \$1 billion in our program of State funds to help us expand more service up to Sacramento, the State's capital, and further down into the Central Valley. And we are tasked with delivering that within the next 3 to 6 years. So we are used to daunting tasks.

We have just four ACE trains that operate in the commuter hours between the Central Valley and the Silicon Valley, our big job market. But on 3 of those 4 trains a day we are carrying over 1,000 people each way. That is a very congested train situation, and we realize safety is paramount.

We are also celebrating our 20-year anniversary. So while we are the smallest, we are not the newest kid on the block. And we have made do mostly by funding from local transportation sales taxes in each of our service counties. We have really found that self help is a necessity when running a regional rail program.

In addressing the topic of today's hearing, I am here to represent to you—and I know we are on the list of nine—that our board and our entire team is more than 150 percent committed to safety in many ways, including PTC. We have undertaken all the steps possible for us, and will continue to take the final steps necessary to fully implement the PTC program by the deadline.

But I do want to be very direct, and especially in response to the opening comments. We have had some challenges. Some we have worked through, some we are continuing to work through. Some are out of our control, and frustrating, but we continue to push ahead.

While being the smallest does have its advantages in terms of agency flexibility and agility, our responsiveness out in the service territory, and very close access to our customers, in a national process where we are vying for the attention of a single vendor and manufacturer of the PTC equipment, we find ourselves sort of pushed towards the end of the line. We really have faced a situation of being at the mercy of the marketplace.

We operate our trains on the host railroads, so our only requirement for the ACE trains are the PTC implementation on six locomotives, eight cab cars, and setting up a back-office server. We also have the responsibility of the crew training, of course, but we have a somewhat limited role in terms of our compliance requirements.

Our PTC equipment was ordered in March of 2017, well in advance of this year's deadline, well in advance of being able to work with our host railroad partners on the testing. But because of the many other orders—and important orders—across the country, the equipment was not delivered until April of this year, so a year and a month after the order. And it was difficult for the vendor, as was mentioned before, to establish a site workforce, given the demands.

This week, 6 of our locomotives—of our total 14 pieces of equipment—that is 42 percent—will be fully outfitted. That is as of today. We are on an expedited installation schedule, so all units will be completed by mid-October. And our test trains begin field testing on Saturday, October 6th. That will continue through into RSD through the end of December under Union Pacific's testing plan.

I would like to give an example of how Union Pacific is helping us out, since our equipment is not fully installed. They helped expedite us getting a desktop simulator that will help get our engineering crews into at least the desktop training sooner, so that they are already well ahead of the game, once the equipment is out and field testing.

Our back-office server has been approved by UP, and we are ready to start configuring all the equipment with the slot 10 cards as soon as the testing units are validated. So we have been trying to be very forward-moving and very proactive in our implementation.

And I know your question is why has it taken so long to get to this point. And I guess it is good news and bad news. Issues that have arisen for other properties who do have the resources to do the R&D testing and work out the bugs, those sort of cascade onto us.

So I will give you an example. The radio antennas, which are common to everyone, they began to fail due to water intrusion for other agencies that were using them. And so the antenna was recalled. So we already had our service kits ordered with the old antennas with the cabling, and we had already installed some. So we were unsure about the priority for us getting the new antennas, since you had operating systems that were failing.

So, rather than wait for that, we continued with the installation of the old antennas. They haven't failed yet. And out in California we are not in a water intrusion situation, so we just forged ahead with the old antennas. We will replace them when the new antennas become available to us down the line, as they will at some point, but it is an example of how we can be a little bit innovative, and just keep making this thing work, regardless of what the challenges are.

On the Amtrak San Joaquins side, I am happy our partner Amtrak has taken the lead. They made a big equipment purchase a little bit after we did, and I think they sort of got in front of us, but that lets us have one of our systems out in the corridors testing already. And I am confident the San Joaquins will be compliant.

And I guess a benefit of being last in line, we have taken advantage of the lessons learned. We have taken the resources that the FRA has offered. Both FRA DC and FRA District 7 have been great to us throughout the process.

Our operating contractor from Herzog, who has been our contractor for 20 years, he came from the Northstar property and has been through the PTC process, so he is helping us expedite, and he is firm in his commitment to me that the ACE service will meet the deadline.

We have also had other partner agencies offer us some equipment if we have some trouble, if anything malfunctions, and we are thankful for that.

So with everyone rowing the boat this hard, I believe we will meet the deadline. And we look forward to adding our name to the list of agencies that are in PTC operation, and we get off the list of nine.

And I thank you for the opportunity to share our experience today and look forward to your questions.

[Ms. Mortensen's prepared statement follows:]

Prepared Statement of Stacey Mortensen, Executive Director, San Joaquin Regional Rail Commission

Chairman Denham, Ranking Member Capuano, and members of the subcommittee:

Thank you for holding this important hearing and inviting me to testify about our experience implementing PTC at likely the smallest commuter rail service in the country.

First of all, I want to note our sincere appreciation for the congressional delegation in our service area, especially the ones who serve on the House Transportation and Infrastructure Committee.

Chairman Denham, Rep. Garamendi and Rep. DeSaulnier have done fantastic jobs in Congress representing their constituents and our humble agency. And we are honored to have them represent us on the committee. Your leadership in all things transportation has been integral to our continued success.

Second, I would also want to thank our Class I railroad stakeholders—Union Pacific and BNSF. They have been incredibly collaborative in so many ways, and we wouldn't have our successful services without their cooperation and leadership.

First a bit about our agency. Under a consolidated staffing model which allows us to be agile, we manage both the ACE commuter service and the Amtrak San Joaquins. One runs up the central spine of the State and the other runs east-west from the Central Valley to the Bay Area. We are headquartered in Stockton in a small valley county and while we don't have large budgets, we make the most out of what we have. Our State recently allocated funding for long awaited expansions to Sacramento and further south in the Central Valley and we are focused on delivering new service in the next 3 years.

Our four daily ACE trains operate during the commute hours between California's Central Valley and the Silicon Valley, with connections to San Francisco. On three of those four weekday trains, ridership is over 1,000 passengers. The ACE Service celebrates a 20-year anniversary on October 19th and has been funded mostly by local transportation sales taxes in San Joaquin, Alameda and Santa Clara Counties.

Let me be clear about one thing from the beginning: The Board and the entire team are 150 percent committed toward safety. We have undertaken all the steps we could—and will continue to do that—to fully implement PTC by the deadline. But let me also be very clear and direct in admitting that we definitely have had some challenges—challenges we have solved and are continuing to work through. Other things regrettably, are not directly under our control—yet we push ahead.

While being the smallest can have its advantages in terms of agency flexibility, responsiveness and close access to the customers, in a national process vying for the attention of the single manufacturer of PTC equipment and software, it has positioned us toward the end of the line.

We were quite simply at the mercy of the marketplace.

Issues that arise in the implementation and testing for other agencies before us can have cascading impacts on our program that are beyond our control. We operate on a host freight railroad, so our only equipment requirement involves our six locomotives, eight cab cars and the back-office server.

The ACE PTC equipment was ordered in March of 2017, well in advance of this year's Federal deadline. Because of the many other orders across the country, the equipment was not delivered until April of this year. Further, the vendor couldn't establish a site workforce until late June. This week, six of our 14 locomotives and cab cars (or 42 percent) will be fully outfitted. All units will be completed prior to the end of October and test trains will begin operating every Saturday starting October 6th. Testing will continue through the end of December under Union Pacific's testing plan.

The back-office server has been approved by Union Pacific and the consultant is ready to start configuring the equipment with the "Slot 10" cards as soon as the first testing unit has been validated. We have been trying very hard to be forward moving and proactive in our implementation.

Why has it taken so long to get to this point? While there are several reasons, one example of the difficult issues we've had to work through was equipment recalls.

Radio antennas for early implementation agencies began to fail due to water intrusion, resulting in the product being recalled. We already had the ACE kits ordered with the "old" antennas and several had been installed along with the cabling.

The priority for delivery of new antennas was focused on systems that were already in operation and those in the Northern States where water intrusion conditions were more threatening.

Rather than wait the undetermined amount of time for the new antennas to be delivered, we continued installation and will begin testing with the old antennas which have not yet failed. We will replace the “old” antennas and cabling after our PTC program is completed and certified.

On the Amtrak San Joaquin side, Amtrak was able to make a large, expedited purchase of the onboard equipment within the last year, so the San Joaquins are already in testing mode. However, this pushed ACE a little further out. But each experience learned in the San Joaquin roll out is valuable to ensuring the ACE program meets the deadline.

One benefit of being last in line is taking advantage of the lessons learned at other agencies. FRA’s PTC Summits have been very helpful and both FRA Washington and our FRA District 7 staff have offered assistance throughout the process. In addition, the General Manager of our Herzog O&M contractor has been through the PTC process. Given his experience with Northstar, we are able to move faster and he is firm in his commitment that we will meet the PTC deadline. Another partner agency has also offered us two antenna kits if we experience any interruption to the installation schedule. In an effort to achieve compliance, Wabtec has assigned more staff and is utilizing our Herzog contractor for some tasks such as pulling cable and welding brackets. I believe that we will meet the deadline.

Another delay that was beyond our control was due to the fact that ACE trains operate on the Caltrain Corridor for approximately four miles in the San Jose area. As you may know, Caltrain will be filing for an Alternative Schedule. We cannot complete work on that stretch without their cooperation.

We look forward to adding our name to the list of agencies who are operating the new PTC system.

I thank you for the opportunity to share our experience with you today and look forward to your questions.

Mr. DENHAM [presiding]. Thank you, Ms. Mortensen. I appreciate you being here.

When is Caltrain scheduled to upgrade the 4 miles of track that ACE operates over?

Ms. MORTENSEN. Caltrain plans to begin testing a segment by the end of this year. It will not be the segment that is for the ACE in the Capitol Corridor, down around San Jose. So they will begin testing, but not in that section. So that is anticipated, I think, in the second quarter of 2019.

Mr. DENHAM. So if you are unable to certify that area for PTC, how does that affect your deadline?

Ms. MORTENSEN. So we are a tenant on both railroads. So they will file an alternative schedule for all the tenants—Amtrak, Capitols, ACE, and UP. And so we will fall under that.

Mr. DENHAM. So they will file for the extension.

Ms. MORTENSEN. Correct.

Mr. DENHAM. You are not required to do so.

Ms. MORTENSEN. Correct.

Mr. DENHAM. Thank you.

Mr. Naparstek, in your testimony you talked about 605 of the 901 Amtrak-owned route-miles have at least one wayside PTC system installed and operational. What are the biggest risks to not completing the remaining one-third of Amtrak’s routes by December 31st?

Mr. NAPARSTEK. The largest risk at this time, I would say, is the interoperability testing, in terms of the time it will take to run the test trains, to evaluate the test results, to submit and get approvals.

So—in each of the areas we run—and we cover a lot of territory. Certainly on the Northeast Corridor, Michigan, Chicago, et cetera,

each one has a little bit of a different risk pattern. But where we are, based on the fact that—a lot of what we are looking at now is doing interoperability testing.

For instance, on the Northeast Corridor—and I think it has been mentioned—until all our tenants are ready for interoperability testing, we can't be 100 percent complete. And we have tenants on various phases. We have Mr. Knueppel's organization, who I think is much more advanced than certainly other commuter agencies.

So working through the whole interoperability, I think, is the biggest risk right now.

Mr. DENHAM. And how far are you on the Northeast Corridor?

Mr. NAPARSTEK. We plan on having all route-miles where we control PTC ready and compliant. So we should be ready ourselves on the corridor, and it will be a matter—we will file for extensions, we will file for the alternative schedule, and then we will work with all our tenants to help them become interoperable.

And in some—I mean in some cases, to be frank, I am working with the tenants right now, my staff and I, to understand when they could be ready for testing.

Mr. DENHAM. You will file for an extension on the Northeast Corridor, as well?

Mr. NAPARSTEK. Yes.

Mr. DENHAM. I would say that—I don't want to speak for Mr. Capuano, but we have shared a number of conversations about the accidents that we have both seen, together—Philadelphia being one of those. And in 2015 this committee was promised that the Northeast Corridor would be 100 percent PTC-compliant by the end of 2015. It is 2018 now, and we are talking about filing for an extension because we are still not there yet.

I am going to tell you it is one of the main reasons of frustration for this committee, when Mr. Sumwalt talks about the 29 deaths that have happened around the country. Amtrak is right there on some of those catastrophic accidents—Philly being one of the most. So it is with a great deal of frustration that we continue to have this conversation and talk about extensions, especially when the last hearing that we had at the beginning of the year we were very explicit about who was going to need an extension and why.

Mr. Batory, what is your strategy to enforce PTC implementation compliance after the 2018 deadline?

Mr. BATORY. Thank you, Chairman.

Mr. DENHAM. I think just pull it closer. I think that one is—

Mr. BATORY. Yes, we are having a technical defect here.

If I didn't know better I would think it was a railroad and we bad-ordered this thing.

[Laughter.]

Mr. BATORY. Very good question. Going into 2019 we will continue the plan that emerged during first quarter of 2018 with the urgency and intensity that we have applied against that plan throughout this calendar year so far.

We are already recognizing where there are violations, and recommending penalties. That is our only, if you will, mechanism to entice more urgency and more effort towards bringing PTC to resolve.

But I would much rather see us retain the resolve for PTC through the constant communication and collaboration that we have demonstrated as a group of people over the past 6 months. We have made considerable inroads. This is my observation of the FRA when I arrived in regards to this particular initiative. It is a personal opinion, based on the facts that were put before me.

We definitely lacked, within FRA, a proactive organization plan with a sense of urgency. We were decentralized in responsibility and accountability. And I am not just speaking of recent date; I am talking over the last 10 years, part of it from my observation from the outside.

Now, was the FRA responsive? Yes. FRA has always been responsive with this initiative. But it was somewhat ad hoc because of the decentralization. But we have a plan today, we started formulating that plan when the Secretary brought me on as a special advisor back in November of last year. It was formalized in January of this year. And I am very pleased and proud of the people that I am working with, both in the railroad industry, in other agencies, and in FRA itself, of what has been accomplished. And we are going to do nothing less than what we have demonstrated thus far.

Mr. DENHAM. Thank you.

Mr. Batory, I am out of time. But one of the questions that has come up as we have had PTC hearings throughout the years is what about the fines that at some point will be levied. I believe it is up to \$27,500 per day. Are you prepared to deal with any of the rails that have fallen behind or ignored the mandate with a heavy fine?

Mr. BATORY. What I have shared internally among the people that I work with daily—and actually, the range can be anywhere from around—I think it is \$857 per violation, up to around \$27,000.

At this juncture, when you have an initiative that is 10 years old, and you see the amount of lagging that has taken place, why would you do anything less than the full amount?

Mr. DENHAM. Thank you. I would now like to recognize the ranking member, Mr. DeFazio.

Mr. DEFazio. Thank you, Mr. Chairman.

To Amtrak, Mr. Naparstek, the—back when we had a hearing in February, President Anderson said, “There may be railroads that operate over our NEC tracks which may not have sufficient PTC-commissioned rolling stock to operate normal services by the end of the year. Under the present rules, we cannot permit noncompliant equipment on our railroad after the deadline.”

But you seem to have said something different. Can you explain that to me?

Mr. NAPARSTEK. Our—

Mr. DEFazio. Please, close to the microphone, so people—

Mr. NAPARSTEK. Our position is to work very aggressively with the FRA and with our tenants in order for, at the deadline, to have each railroad operating services as safely as possible.

I want to make sure—

Mr. DEFAZIO. Yes, but that—not as—I don’t want as safely as possible. This was pretty definitive. We cannot permit noncompliant equipment to be used. Does that still stand, or not?

Mr. NAPARSTEK. We expect every tenant that will operate on Amtrak—Amtrak will be 100 percent operating trains——

Mr. DEFAZIO. Got that.

Mr. NAPARSTEK [continuing]. With PTC.

Mr. DEFAZIO. Right. But these are on your tracks——

Mr. NAPARSTEK. We expect every tenant to be operating either with PTC or under an extension, under an alternative schedule.

Mr. DEFAZIO. OK. So the statement should have been qualified at the time, saying not—so you are saying that someone has an extension, the equipment is noncompliant, but it is not noncompliant because they have an extension? OK. Interesting.

All right, and then he also said, you know, that, obviously, there will be carriers over which we operate who appear unlikely to achieve sufficient progress to apply for an alternative PTC implementation schedule by the year’s end. For any route segment Amtrak will suspend operations. How are we doing there? Are we going to have suspensions of service in certain areas? Are we going to have holes in the system?

Mr. NAPARSTEK. At the point—since the statement was made, there has been a lot of progress made by host railroads. As we evaluate where our hosts are, our hosts will either be operational or will qualify for alternative schedules. We are not anticipating right now that there will be a host that will not have at least an alternative schedule.

Where we will run over MTEA [Mainline Track Exclusion Addendum] territory or where we will run over alternative schedule, we are applying risk mitigation strategies, we are looking at the territory, and we are saying what additional risk can we do to close the gap.

The goal, our goal at Amtrak, will be to be running PTC 100 percent everywhere we run. That is not a goal we will be able to achieve by 12/31, but we are committed to make that goal, and we will continue. So even over MTEA territories, we will continue to move towards PTC. In the meantime we will use risk mitigation to move towards what we are terming as “PTC equivalency,” using other operational and technology means to close the gap.

Mr. DEFAZIO. OK. Administrator Batory, I guess you are going to get a flood of extension requests. And, as I understand, these are rather complicated and lengthy documents.

I mean are you, you know, staffed up to the point where you are going to be able to process all of these by the first of next year? Especially if some of them come in, you know, in December?

Yes. Yes, I think it is—it might be working this time.

Mr. BATORY. Can you hear me?

Mr. DEFAZIO. Yes.

Mr. BATORY. We will get it closer. There we go.

Now, we are talking about the acceptance?

Mr. DEFAZIO. Well, the extensions.

Mr. BATORY. The—OK, the——

Mr. DEFAZIO. Yes. I mean there is—you are going to get quite—well, you are getting a pile of both, OK?

Mr. BATORY. It is—the extensions thus far, for instance, we have the ability to handle the alternative schedule requests within a timely period where the—we have a 90-day window. We have to go back and tell the applicant what the concerns are, if any, within the first 45 days, and then we have the remaining 45 days to [inaudible].

Mr. DEFAZIO. Well, if people submit documents on the first of December, and you get 45 days to send back concerns, do they qualify to continue to operate on January 1, even though you have—

Mr. BATORY. Yes. Yes, they do.

Mr. DEFAZIO. Well, that is probably going to mean you are going to get a heck of a lot of people filing on whatever the last business day is in December.

Mr. BATORY. You are exactly right, Congressman. And we have discussed that with the prospective to-be-compliant carriers. We have talked about it internally.

We are going to be able to be responsive to the alternative scheduling requests. The one that is concerning that we may want to discuss later has to do with the certification of the safety plans.

Mr. DEFAZIO. OK, all right. My time has expired. Thank you, Mr. Chairman.

Mr. DENHAM. Mr. Shuster, you are recognized.

Mr. SHUSTER. Yes, Mr. Batory, can you—I don't think I quite—Mr. DeFazio, I think, has a great question. And I guess the answer I am looking for is do you have enough staff to meet those timelines? That is—I am a bit unclear on that.

Mr. BATORY. I have a calendar that we have to respect and recognize.

Mr. SHUSTER. I am sorry, I can't hear you.

Mr. SUMWALT. I do want you to note that the NTSB does occasionally help the FRA.

[Laughter.]

Mr. SHUSTER. I see that.

Mr. DEFAZIO. The room is getting redone next year, and there will be—

Mr. BATORY. I trust—

Mr. DEFAZIO [continuing]. Include a new sound system.

Mr. BATORY. I trust that is for the record. OK, OK.

In regards to how we are staffed, we have 30 people that are assigned full-time to the administrative review of PTC. When we look at what we have in the way of talent among those 30 people—and that is the key, talent—we have a sufficiency rate of probably in excess of 80 percent. The other 20 percent are going through the learning curve.

Now, we are also retaining third-party service providers. And as far as getting past this calendar year and into next year, the administrative burden that we are going to see facing ourselves we feel comfortable with.

I will add one thing, though, that I talked about earlier about FRA and how it—

Mr. SHUSTER. Sure.

Mr. BATORY [continuing]. Polices itself. Starting early this year, we instituted a perpetual inventory of all administrative instru-

ments that entered the FRA, was being handled within the FRA, and being sent out by the FRA concerning PTC. We defined timelines for ourselves, as far as how much time we should give ourselves to respond. That has helped immensely, because now we really understand what we are faced with, and we are maturing as every day goes on.

Mr. SHUSTER. OK, thank you.

Ms. FLEMING. Mr. Chairman, could I—

Mr. SHUSTER. Sure.

Ms. FLEMING [continuing]. Add perspective to that?

Mr. SHUSTER. Sure.

Ms. FLEMING. You know, we talk to all the railroads, and they, quite frankly, do remain concerned about FRA's ability to manage the influx of documentation.

As I mentioned in my opening remarks, we have 32 out of the 40 railroads that are going to seek an extension. So FRA is going to have to deal with reviewing and approving all of that documentation. You have got substitute criteria of requests to initiate testing, RSD. Safety plan documents could be as long as 5,000 pages.

There has been some movement of some resources, particularly with testing, and they have expanded some technical contracts. But it hasn't amounted to a substantial increase in resources. So we really think they should implement our rec, which is to come up with a more strategic, risk-based approach. It is not about getting to just December, it is not even about getting to 2020. This is kind of a game-changer for the railroad operations and industry, so they are going to be in it for the foreseeable future.

Mr. SHUSTER. Well, and you mentioned risk-based, and I know Mr. Batory and I have talked about risk-based and, you know, this is not the hearing to talk about this. But I think in the future—I won't be here, but I hope this committee deals with it, not just the railroads, but industry in general.

When you deploy technology, many—the railroads, this is a new technology, it has been extremely complicated. But once it is implemented, I think the technology is going to grow exponentially. And the FRA has to be working in collaboration with the freight rails to make sure that we are moving fast, because I have seen so many times that technology is developed, and by the time the Government gets around to saying OK, there is new technology.

So, Mr. Batory, can you respond to that?

Mr. BATORY. Yes. Let me also share this. And this was something that was enlightening to myself. And, you know, it is one thing to live outside the tent, and it is another thing to live inside the tent.

Mr. SHUSTER. Right.

Mr. BATORY. When it comes to PTC—and this is a tribute to yourselves and all your colleagues in Congress—we have two statutes, one from 2008 and the one from 2015. The one in 2008 was three sheets of paper. The one in 2015 was six sheets of paper. We took that, OK, and we formulated regs. And we came up with 45 pages of regs. And then the rulemakings that percolated out of that was 190 pages.

Implementation plans, which are things that are already behind us—now, they have to be maintained, they are living documents—represent anywhere from 150 to 200 pages, with a lot of technical substance that has to be maintained, going forward, forever more.

The one that gives everybody a concern is the safety plan. And I was astonished. And remember, my railroad in my prior life had to be PTC-compliant. The typical safety plan, regardless of the amount of mileage or the size of the railroad, averages in excess of 5,000 pages of paper. Now, that might be surprising to some of you.

Now, as a result of these symposia—and that—this is where I think people get concerned. How do you administer 5,000 pages of paper? How much of it is substance and how much of it is fluff? Is it format over substance, or is it substance over format? So, as a result—and to put 5,000 sheets into perspective, it is one Xerox box of paper, so it is pretty heavy, too. And that is what we are struggling with.

Mr. SHUSTER. Right.

Mr. BATORY. And what we have identified is there is a way in which—to go after the substance and facilitate this process much faster.

Now, when we had this symposium I just referenced a moment ago, I had 100 people in the room. The 100 people in the room were the experts of the railroad industry. I said, “Has anybody in this room written their entire safety plan?” There was no raising of hands. I said, “Has anybody in this room read the entire safety plan?” There was no raising of hands. “Has anybody edited the entire safety plan?”

There was no raising of hands, because it has been syndicated out within their respective companies or out to third parties, then put together, and then sent to the FRA. And then, when people see what they are sending to the FRA, they are astonished, and they say, “Can the FRA really handle all this?” And that is where we have now learned that we are able to look at these safety plans, give conditional approval.

At this juncture we have given conditional approval to a total of nine: six of the seven Class I's. The only one that hasn't gotten conditional approval yet—but we have it—is Canadian National. We have two commuter railroads—that is Metrolink and SEPTA—and then we, naturally, have Amtrak.

So that is why I bring this to everybody's attention. Let's not make something out of perception, let's talk about facts.

Mr. SHUSTER. Right. Well, I think you have got a great point. I have run out of time here, so—but I just want to make one final point. Again, that is a great point. You and I have had this discussion.

But I just want to say that you really give me great confidence that a guy who comes from the operating world, comes to the Government, and I have great confidence you are going to change things at FRA, and you have demonstrated here, right here in this committee room, when you had a problem with your mic, you didn't screw around, you reached over and got another mic, and solved the problem immediately. And that is what it takes, I believe. So thank you very much.

I yield back.

Mr. DENHAM. Mr. Capuano.

Mr. CAPUANO. Thanks, Mr. Chairman. Again, I want to start out by recognizing the railroads that have done their jobs, which is the majority of them. They are at least heading in the right way, particularly the Class I's. So I want to start there.

At the same time, as I sit here, you have heard the chairman say several times we have asked—for years now, people come and tell us what they need. No one has. No one came and said we needed extra time. No one came and said we needed extra money. And the FRA didn't come and say we needed more people. So I sit here thinking there is no reason that we should have anybody in this situation.

As I sit here and I look at it, I think it is incredibly unfair to the railroads who have done their job to allow those that have not, to escape this.

The permanent exception you gave to somebody is unacceptable. And I believe, if there is ever an accident on that line, that permanent exemption will be thrown out by a court of law, because there was no authority to do it. Simple. And when that happens, somebody at the FRA is going to be held to blame. It may not be you; it will be somebody.

And if it happens again, we will get another one coming in looking for an exemption because they don't have any money. Every railroad in the country could have made that excuse, yet they didn't. They came in and said, "OK, we have money, we will do this, we will reprioritize our spending."

And to sit here and say to somebody they have no money, here is my answer. On line 7 of your written response, Mr. Batory, you say you imposed the maximum civil fine on 13 railroads of \$27,904. Thank you. But you also say it is a one-time fine. Eleven lines above that you also say you could assess that fine for every day they are not in compliance—\$27,000 one time is not the maximum fine. It is \$27,000 per day, per railroad, every day. And that money could be then used to help those, including the ones who are fined, to actually reprioritize their spending.

I got to tell you I have none—zero—sympathy for the handful of companies that haven't done anything. None.

And I have said it before and I will say it again. It is only a matter of time until the next accident happens and someone dies. We have got NTSB—I believe your numbers were 29 deaths and \$190 million. How much is a life worth? Apparently, it is \$190 million.

Well, guess what? That is not near what my wife is worth, not near what my children are worth. Maybe you don't value your families as much as I do.

And again, I don't think anybody wants to—it is a business decision. The FRA has the authority—and if you don't have the authority, you should come to us, even today, and say, "We don't have the authority to do this, we don't have enough people to do that," whatever it is, and we will do our best to help you. But unless you do that, we have to presume you have got what you need.

I also have to presume, since you have done it in your previous life, you know how important this is. There is no excuse not to do it.

And where is the sympathy coming? How are you supposed to look at one of the Class I railroads who have done this, spent millions of dollars doing this? They didn't really want to do it, but they were told they had to, they finally realized, OK, we got to do it, let's get over it. How do you turn to them and say, "Thank you for doing what you did, thank you for reprioritizing your spending. But you, over here, Music City, New Mexico Rail Runner, doesn't matter. You can go right ahead, keep killing people." It is totally unacceptable.

I don't think you are going to find anybody on this side of the table who is going to accept that responsibility. I don't think you are going to find anybody—it comes January, the next rail accident that happens after January, that they are going to sit here and say, "Not a big deal." And that is fine, if that is what you want to do.

I also think you got lawsuits coming. You got lots of lawsuits coming. And maybe my next life, maybe I will go back to practicing law so I can take one-third of that fee. It is going to cost a fair amount of money. And you know what? There isn't a single person that I know of that wants a penny of it. They don't want to lose their loved ones.

So again, I am going to end where I started. I want to thank the companies that have done their job. I know it wasn't easy. I know some of them had to be pushed, kicking and screaming. And again, I am not trying to be a perfectionist here. I get there will be some extensions. That is OK, within reason. But there are a couple of companies that haven't done anything. And we have been down that rail before, and it is wrong. And I don't think this Congress is going to accept it any longer.

I apologize for the rant, but, what the hell, that is what I do. Thank you.

[Laughter.]

Mr. DENHAM. Thank you, Mr. Capuano.

Mr. Gallagher?

Mr. GALLAGHER. Thank you, Mr. Chairman.

First of all, I would like to thank all of you for being here today and taking the time to brief us on this very important matter.

Mr. Batory, given that PTC connects trains' controls to wireless networks, is there any instance where a successful hacker could theoretically gain control of such a system to disrupt their functionality, and even potentially cause a derailment?

If so, what measures are being taken to prevent such a development?

Mr. BATORY. Thank you, Congressman. Yes, there are efforts that have been underway long before PTC. And we are fortunate that those efforts were underway before the development of PTC, because we are capitalizing on the results of those efforts.

Imagine our automated train control systems that we had in place throughout this country, all of our sophisticated computer systems and networks that we have within the railroad industry. We have teams of people within the corporations that work very silent, but effectively, in developing the software technology that is needed to monitor perspective hacking, as well as protection of

hacking. And that is carrying forward into the PTC realm, and has to continue to be maintained.

Mr. GALLAGHER. Just in terms of the overall threat landscape, do you feel like you are getting the information you need from the interagency, from all the stakeholders necessary to understand who might be trying to penetrate systems and networks?

Mr. BATORY. I can only speak for myself, personally. I have never sought, OK, specifically who is attempting. But there have been attempts in the other systems, OK, non-PTC. And the railroad industry individually, as far as companies, as well as collectively, has been quite successful.

Mr. GALLAGHER. Thank you.

Mr. HAMBERGER. Mr. Gallagher, if I could chime in there, it is a major concern for the industry in general, but for PTC in particular. I would like to get a more detailed answer for the record, but I believe the data transmissions are encrypted, and I believe we have a very reputable contractor, whose name I don't have at the tip of my tongue, working with us to help provide that security.

But I would like permission to submit a more detailed answer for the record, Mr. Chairman.

Mr. DENHAM. Without objection.

Mr. GALLAGHER. Thank you, Mr. Hamberger. And I would like to follow up with you. And forgive me for being new to all of this. You know, the chairman has assigned me a lot of homework as the newest member of the committee, and I am staying up all night to do it.

But the FRA and FTA have awarded grants that have subsidized PTC implementation to the tune of more than \$1 billion, correct? So much of this has gone into infrastructure that the freight railroads use, and has thus helped defray any investment that the railroads would otherwise have to make themselves.

Could you just sort of tell us why you think that this subsidization of a private profitable industry is justified, and—not to stoke division—but especially when I hear often from AAR that, for example, trucking doesn't pay its fair share, and things like that, I just would be interested in your perspective on that issue.

Mr. HAMBERGER. I would like to get a little bit better understanding of that \$1 billion. I believe most of it has not gone to the Class I freight railroads. I believe it has gone to short lines and to commuter roads, primarily. So I stand by the AAR position that this industry has spent over \$10 billion of private-sector money, going on—by the end of this year it will probably be \$11 billion not subsidized, not taxpayer money, private-sector money to meet this safety mandate.

And so, if we are going to transition into the issue of modal equity, the matter is really how much of the trust fund comes from user fees and how much of it comes from non-user fees, and the last—

Mr. DENHAM. Mr. Hamberger, can I interrupt real quickly before Mr. Capuano leaves?

[Laughter.]

Mr. DENHAM. I just want to thank him for his leadership on this committee. He has been somebody that not only have I worked

very, very well with in a very bipartisan fashion, but I have learned a lot from him, too. His passion, but his knowledge is a lot.

And I will tell you. I have even learned that not only can you buy a cheap shirt, but it is quite—it has got a cooling effect to it.

[Laughter.]

Mr. DENHAM. He is a fashion statement that we are all following.

[Applause.]

Mr. CAPUANO. Thank you.

Mr. DENHAM. You are a good man, Mike.

Mr. Hamberger?

Mr. HAMBERGER. I was in the middle of a rant there, Mr. Chairman.

[Laughter.]

Mr. HAMBERGER. But let me just close by saying that in the past 10 years \$43 billion of taxpayer money has gone into the Highway Trust Fund, not user fees, to subsidize those people whose infrastructure is funded by the Highway Trust Fund.

Mr. GALLAGHER. Mr. Chairman, I had a whole line of questioning related to the utility of short-sleeve, button-down shirts and them going in and out of style, but I will forgo that.

I would just respond by making a point that, with freight in this country expected to increase by 40 percent over the next 30 years, you know, this is not a zero-sum game between different modes. There will be room for everyone to grow. Everyone has to have skin in the game. We need to make a public, as well as private investment.

And so, I think we need to ask hard questions around what, you know, everyone has to do. And so—and particularly when it comes to the cyber vulnerabilities, I will look forward to the followup.

Thank you, Mr. Chairman.

Mr. HAMBERGER. And I will be glad to follow up on the modal equity issues, as well.

And for the record, I was incorrect. It is \$143 billion in the last 10 years, not \$43 billion, \$143 billion of non-user-fee revenue into the trust fund.

Mr. DENHAM. Thank you.

Mr. Lipinski?

Mr. LIPINSKI. Thank you, Mr. Chairman. I want to start out with Mr. Batory.

We were talking about the safety plans that had not been submitted. So looking at the PTC dashboard, it looks like CN has submitted a plan, but it has not been approved yet. Is that accurate?

Are you going to prioritize approving plans ahead of requests for extension, so that those get done more quickly, and that PTC can be started up on those lines?

Are you going to prioritize approving the submitted plans, safety plans, over the request for extensions?

Mr. BATORY. Yes.

Mr. LIPINSKI. I just want to make sure you are going to——

Mr. BATORY. Yes, yes——

Mr. LIPINSKI [continuing]. Be able to get done, because——

Mr. BATORY. Both efforts are going in tandem. And as far as the CN one, it is currently being reviewed, and there are some unique

circumstances about that that I would certainly share with you, in the essence of time——

Mr. LIPINSKI. OK.

Mr. BATORY. But it is positive.

Mr. LIPINSKI. OK. More general, I just wanted to make sure—as Mr. Shuster was talking about, we want to make sure you have the ability to move forward as quickly as you can with all this, because the requests, as you have said, are going to come pouring in.

Now, how much grant money does the FRA have still right now from fiscal year 2017, 2018 for PTC grants? I know some money went out in late August. How much more is there?

Mr. BATORY. If I could, Congressman, let me characterize it this way.

First of all, we have, out the door, OK, among all the parties associated with PTC, \$2.6 billion so far.

Now, since fiscal year 2017 we had CRISI money of \$67.32 million that was noticed during first quarter, and selections are currently under review. A portion of these funds went to a PTC project under the special transportation circumstances program.

We also had the CRISI money that was identified strictly for PTC, the \$250 million. As soon as that hit, we recognized that we had to do something different, and get that money out as quickly as possible, without compromising the due diligence that we have to administer in getting money into responsible hands. And we were able to get that accomplished within about 75, 90 days.

The part that was interesting about that—and I want to touch on, and I shared this with staff internally, I shared it with some of your colleagues—at this juncture it was more about the calendar than it was the money. But it—we did webinars, which is nothing new for FRA by a stand-alone, but we sought APTA, we sought AAR, we sought other associations and said, “Get your membership on a webinar. We will help facilitate it so we can get this money into the responsible hands.” It was undersubscribed.

So, as a result, we just issued a NOFO, I believe this week, to get out the balance that was not taken——

Mr. LIPINSKI. How long do you expect that to——

Mr. BATORY. And we are going to try to get that done within about 90 days—again, if not less. Because——

Mr. LIPINSKI. Now, that last one was very impressive.

Mr. BATORY. You have to get this money in their hands, so that they——

Mr. LIPINSKI. Yes.

Mr. BATORY [continuing]. Can get the equipment purchased, get it delivered, and get it applied.

Mr. LIPINSKI. A lot of us have been talking about passenger rail as a big concern here. It is also—but honestly, this is a tough one, when it comes to—we want to make sure that commuter rail, especially, is going to get PTC installed as quickly as possible.

But, you know, a question out there: are we going to be levying these big fines against commuter railroads who do not—may not have the money to begin with, and that is why they are so slow in getting this done? And what will happen next? So, you know, that, I think, is a question.

Do you have any, you know, comments on that?

Mr. BATORY. I certainly do. Let me share a statement of fact. When we had individual meetings, eyeball-to-eyeball, with each of the 41 railroads—and at that time I was not yet confirmed, I was an advisor to the Secretary—I shared with each of them that I often sat on the other side of that table, where they were sitting. So I asked for candor and thorough understanding of where they were with PTC.

And money came up in each of those conversations, and only in 2 was money an issue among the 41 to-be-compliant railroads. It was more about the calendar, and can we make the calendar as far as physical installation and implementation of the equipment. Those two railroads was the Rail Runner in New Mexico and Caltrain train in California.

Other than that, there wasn't—now, that is not to say that there isn't a railroad that wouldn't have taken a check that day. They all would have taken money. But none of them said money was an impediment.

Ms. MORTENSEN. Congressman Lipinski, if I could add to that as a small commuter rail property, I had to do risk analysis about funding the PTC program. And what we did instead was—our State is very supportive in California of getting PTC installed. And so, through State sources related to safety and security, we funded our \$7 million PTC program.

I worried, just about the timing of Federal grants coming out, that that would be another one of those issues that is out of my control that would push when we could make the order of equipment. And so there are times when there is just the uncertainty of the grants added on to the uncertainty of all the rest of the program that—we couldn't bear that risk.

And so, while we—the offer was made, we did go forward with State funding, just because it had more certainty about when we would have our hands on it and be able to get it to the vendor and order the equipment.

Mr. LIPINSKI. All right, thank you. I yield back.

Mr. DENHAM. Mr. DeSaulnier?

Mr. DESAULNIER. Thank you, Mr. Chairman. I admire your attire today. For the record, I paid \$5.98 at K-Mart for this shirt, so I realize the wisdom of Mr. Capuano, and I want to make my comments in the same spirit of Mr. Capuano, but looking more towards the future.

So, Ms. Mortensen, I have been around long enough to remember when you started. If memory serves me, there is, like, 175,000 car trips through that corridor right now. We have got companies like Facebook and Google anxiously wanting to write checks to improve that. We talked about doing the Dumbarton Bridge. So you are taking 2,000 people.

So I would like to make this comment—and if you could specifically add to this and come back to Mr. Batory—this reminds me of an FDA hearing in another committee. We have got people who want the FDA to do best practices and make sure they don't make mistakes. But they want them to get new inventions—in that instance, in biomedicine—and to saving lives.

In places like the bay area and Philadelphia and urban areas, we have got this huge demand, mega-trips, people spending 2 hours

going both ways, yet imperiling the growth of these urban areas where 65 percent of our GDP comes from. So we want to get it right.

But looking forward, what do we learn from this? We can expect new technology, we can expect new innovation. But right now people are struggling with their day-to-day life, and it is impacting the national income if we don't get this infrastructure right.

So, Ms. Mortensen, maybe you can—I know about your instance, because Mr. Denham's constituents come through my former constituents when I was in the legislature. They are going out there to buy affordable housing. They are working as software engineers in some of the biggest companies in the world. They are taking 2 hours to go. But you are overprescribed.

So what are things that you look at, your situation? You could take more of those cars off the Altamont, off 580, and put them into a real world-class commuter rail system, if we got our act together here at the Federal level, and knowing that the State is ramping up, as you said, a \$1 billion just for that corridor.

Ms. MORTENSEN. Well, I think one observation I have seen about the Facebook issue—and I have been in transportation 25 years—this is the first time where we have flash mob population that ends up at one place at one time.

It used to be, when an industry would come in, it would take some time to develop the plant—you know, a production plant, a steel plant—you would know how fast it would grow and how many employees would be there over time. And it followed a fairly predictable schedule. With the new tech firms in the Silicon Valley, there can instantly be 19,000 employees in one location, and that is not a unique situation. It is happening over and over again. Government has a difficult time responding so quickly to put the infrastructure together for something like that.

And so I am aware of the issues on the Dumbarton Bridge, a very valuable bay crossing that doesn't exist today. And I think public-private partnerships, where we let the public sector take the lead and maybe push things through faster than the Government can, is a way to look at those kind of situations to solve it faster. We would definitely utilize the Dumbarton Bridge. But if we do the typical Government study/design/build process, it will be 35 years.

Hopefully—there is a financial partnership between Plenary and Facebook that has about \$1 billion on the table. And I think that kind of thing we should support at the Federal, State, and local levels, because capacity is critical. We have to solve our own problems within the communities.

And then we have to negotiate with our Class I railroads. That is a commodity for them. We want our goods, too, not just people movement. So it is a give-and-take on a lot of different fronts.

Mr. DESAULNIER. So, Mr. Batory—and I would like to, in the context of Mr. Sumwalt, who—NTSB came to your rescue there with a microphone, his quote was, "Every day that we go without PTC, we are at risk of a mass casualty event due to human error."

So here is the balance. And you said urgency. We have got these demands of commuters, their lives being affected. We want to get new—so what have we learned from this experience? How can we fix this, once and for all, but going forward make sure we are more

nimble about getting new technology in place and out into the commuter's benefits?

Mr. BATORY. Thank you for that question. Just to speak on PTC first, it has been a 10-year journey. And—

Mr. DESAULNIER. It is too long.

Mr. BATORY. Exactly. What did this phone do 10 years ago? And we are basically trying to put in a platform that we designed 10 years ago.

So, as a result, I understand that there may be some frustration and irritation about things that have taken place that evolve from the past. But I am trying to lead this initiative looking through the windshield, and not through the rearview mirror.

And we have to go forward, we have to bring closure to PTC 1.0, as I call it, recognizing the calendar gives us as much latitude as 2023. But we can't wait that long. And if we get it done sooner, we can then have a more robust, efficient PTC system that will be less money to maintain and operate, it will have more risk reduction, enhancing safety overall.

And when you start doing that you take variability out of the system. And when you take variability out of the system, you create capacity. And that allows for additional organic growth. We see that, both in the passenger side and the freight sector, but we have got to get this accomplished and quit worrying about the past.

Mr. DESAULNIER. But the key part—and this is for future hearings—is what have we learned from this experience, going forward. So when you put the phone up—this discovery 10 years ago, we don't want to be here 10 years with some undeveloped, unknown technology now going through the same experience. There is a real demand and consequence for everyday people's lives if we don't get better at this. So that is the point of my question.

Thank you, Mr. Chairman.

Mr. HAMBERGER. If I might be so bold, I think what we have learned is that a mandate that is so specific is what is causing the problem. If the mandate had been reduce accidents by X percent, if the mandate had been reduce fatalities, reduce accidents per train mile, then the industry, working with suppliers, would be able to leapfrog technology, move forward.

And I am hoping that that lesson is learned so that, once this platform is put in place—and it is a heck of a platform—that there are a lot of people in the Class I's now, sitting in—you know, smart people—how do we take advantage of this to go to—what I refer to PTC 2.0—and get additional safety benefits, additional operational efficiency benefits. But we are going to need an FRA and a Congress that allows us to do that, and doesn't impede us from being able to do that.

Mr. DENHAM. Thank you, Mr. Hamberger.

Mr. Babin?

Dr. BABIN. Yes, sir. Thank you, Mr. Chairman. Thank you, witnesses for being here. And this will be for Mr. Knueppel. Is that the way you say it, Knueppel?

Mr. KNUEPPEL. Knueppel.

Dr. BABIN. Knueppel, OK. Sorry about that. Can you tell us about some of the commuters that are on track to meet the dead-

line, and what they are doing that is making them successful in this implementation? Just give me a rundown, if you don't mind.

Mr. KNUEPPEL. Sure. Obviously, I can give you our own experience, which I talked a little bit about today.

For a public agency, there are a lot of things that kind of have to break the right way. For us, we were fortunate in that we had had an in-house signal construction program already going. And so we just were able to expand it. The fact that we were also able to use contractors and find a way to have both working at the same time was very good.

A lot of people have been retiring in the last 10 years. At my company I have lost, just generally, 25 percent of my employees in the last 3 years.

Dr. BABIN. Wow.

Mr. KNUEPPEL. And so, keeping your talent and your team together is usually a big factor in how an agency will do.

We do low bids. Low bids can work out. Low bids cannot work out. We were very fortunate with Hitachi and formerly Ansaldo, and they were very motivated and they worked well with us, and they were based in Pennsylvania, so that helped.

For SEPTA, radio spectrum went very well. When we went to pursue it, the person was extremely reasonable and actually owned it, which made it a lot easier.

Relationships are a big deal. With CSX I can tell you that, you know, we had already separated on one of our territories with them. So having to separate again, it was just a follow-on. We did that separation project with them in less than 2 years, start to finish. And the TIGER funds were, as I mentioned, very helpful.

But we had also a radio interference problem with them, and it got tough. But the relationships that we had, we ultimately worked through it. I liken it to the Cuban Missile Crisis, but we got through it.

Amtrak was very, very instrumental in helping us, and their engineering group was based out of Philadelphia, so that was extremely helpful.

And the FRA, you know, I think, has been very, very helpful to us. And the Administrator has even come to me and sat in my office and made sure that I had what I needed and answered any questions, so that, you know, your relationship with the FRA is important.

Your workforce, you know, your train crews, it is a big change. And so the agencies that have a positive approach towards it, and buy-in, that helps.

And for us, you know, I had a very supportive board. We were at a very, very low time, in terms of our capital funding, but our board was very, very supportive. And our riders, I can't thank them enough, because they knew what was going on, we were telling them, and it did affect them. Our on-time performance went way down, as we—we run every car we can every day. They are always asking for more cars on every train. And we had to take cars out of service to equip them, and they were patient, and they let us keep going.

Dr. BABIN. I want to ask you one more question, though.

Mr. KNUEPPEL. Sure.

Dr. BABIN. If you can just go ahead and wrap up——

Mr. KNUEPPEL. I am done, I am done.

Dr. BABIN. You are done? OK.

Mr. KNUEPPEL. So those are kind of the positive things that came out of our experience.

Dr. BABIN. OK, thank you. And then, how much money have commuter railroads invested into PTC, and what is the estimated total cost?

Mr. KNUEPPEL. \$4.1 billion.

Dr. BABIN. OK.

Mr. KNUEPPEL. And the funding that has been made available to us is about one-tenth of that. And 80 percent of that has really only come since May of 2017.

The problem with having the money come late is with the requirements of the funding. You often can't use it on contracts that have already been awarded. So that is what makes it difficult to have the money—have—in most cases, for commuters, come later. But we are certainly making use of it wherever we can.

Dr. BABIN. OK, thank you. Thank you very much.

And I yield back, Mr. Chairman.

Mr. DENHAM. Thank you.

Ms. Esty?

Ms. ESTY. Thank you, Mr. Chairman. And I, too, salute Mr. Capuano and his short-sleeved shirts.

I wanted to touch on two topics, as I think the last one here—no, no, Mr. Weber is joining us.

The first, as somebody who represents Connecticut, I have to drill down more on the Northeast Corridor and serious concerns. There has been way too much loss of life. There continue to be delays on that. And safety is paramount.

And the other is I do want to, before the close of my 5 minutes, return to Mr. Hamberger's point about, basically, performance standards. And I think if we in America are going to have a transportation and an infrastructure system that is state of the art, we have got to figure out how to move much more nimbly. And I do want to return to that, because we saw that with NextGen. We are seeing that with this. And we are losing ground around the world, and we have got to figure out together how to stop pointing fingers at who is responsible and saying we have to redo how we get to fast, safe, affordable.

So on the Northeast Corridor, Mr. Naparstek, I know—not everybody in this room knows, but I know the Connecticut lines are owned by the MTA, not Amtrak. So when you say how much—when you are talking about how much of that, of the Northeast Corridor that everything Amtrak owns is going to be compliant, what is not going to be compliant? So what lines are—what portions are not going to be compliant, and how heavily traveled are those portions?

Mr. NAPARSTEK. [No response.]

Ms. ESTY. Because the rails are actually owned—in Connecticut are owned by Connecticut, are owned by the MTA. They are not owned by the State of Connecticut. Are those all going to be compliant with PTC?

Mr. NAPARSTEK. I believe—let me get back to you with specifics on Connecticut. And I actually have somebody on my staff who could easily answer that. But I believe they will be compliant. But I would want to verify that 100 percent, in terms of Connecticut.

Everywhere we run service in Connecticut should be compliant by 12/31/2018.

Ms. ESTY. All right. Because I have to say it. For many of us this is like Groundhog Day. I have been on this committee for almost 6 years, and we have been hearing about we are close, we are close, just give us a little more time, a little more time. And frankly, you know, I have to say the folks in my district are angry and worried and late to work. Like a combination of all those. That is not a good combination.

So you hear that frustration up here? That is because—and the chairman of the subcommittee has raised that—people have not come forward to say, “This is what we need.” And to wait until the eleventh hour, I mean, how is Mr. Batory supposed to go through on the 31st of December? This is like college, you know, paper being done all night and asking for an extension at, you know, 1 minute of midnight. It is not any good way to instill confidence in the riding public. And it makes it impossible for us to do our jobs of oversight. And that is really for everyone. I mean don’t wait. Tell us what you need, and we will try to work with you.

Mr. Batory, I agree with you on those fines. I mean you get people’s attention, people—and the Class I freights have complied. But if people are not complying—you change the business calculation if you are facing a big, fat fine. And we did do that extension in 2015 because we wanted the money to go to PTC, not to fines. And here we are, 3 years later, and it didn’t work. So I think people say take out the sticks now, because this is not working. We haven’t succeeded in getting this done.

So again, what is it going to take to get this done as rapidly as possible? We are not going to performance standards 2.0, we had better go to performance standards. What exactly do we need to do right now to get this done as fast as possible? Is it fines?

I mean, Mr. Batory, do you think it is fines? And I want a fast response. Do you think it is fines to get attention now?

Mr. BATORY. That is definitely a tool in the toolbox. And as I mentioned earlier, I would like not to have to use that tool. But if that is the one you have to use in combination with everything else that we have now invoked, OK, I think we should do nothing less than that, insofar as exercising that.

But the main thing is getting the concentrated, concise, collaborative communication. And I am going to speak to the Northeast Corridor, from Boston down to Washington, DC.

When we met with those 41 railroads, Amtrak was one of them. And even though we have read in the newspapers over the last 3, 5 years that the Northeast Corridor has PTC in place, it has pepper spots and stains all over it where there is no PTC. They have done an excellent job this year in trying to get rid of those pepper spots and stains where Amtrak is in total control of itself.

The next thing that became very apparent, we had to maintain nothing less than a dialogue of once a month on a macro perspective with Amtrak. We maintain a dialogue with them daily,

tactically, on PTC. But they host a lot of commuter railroads. So, as a result, it then became apparent that we had an absence of synchronization between the commuter railroads and Amtrak. And the only way you are going to get that resolved is communication, and you can never have too much communication.

So, as a result, with our monthly meetings now, we have basically—we don't ask people to come to Washington, but we allocate whatever amount of time—it is usually about 15 to 20 minutes—for each individual commuter railroad to express on the monthly call where they see issues with Amtrak, and where Amtrak sees issues with the commuter railroad, so we can get them in synch, and get this PTC piece in place. It is a very densely operated piece of railroad that doesn't lend itself to absorbing a lot of variability because of its density. And we have to have this interoperability piece in place sooner, rather than later.

Ms. FLEMING. May I add a perspective? I think one of the things that we need to think about is that only eight railroads said they are going to make the December deadline. So 32 are seeking an extension. Of those 32, 12 would like to use substitute criteria, particularly initial testing. And that is in the really early stages. And our analysis has shown that from initial testing to RSD takes, on average, 2 years. So if you do the math, we are concerned that some railroads won't even make 2020.

Mr. HAMBERGER. As long as people are adding on, let me add on, if I might, Mr. Chairman, those people who are filing for an alternative schedule, I would argue, are not filing for an extension. They are filing for an alternative schedule under the law, as written.

Several Class I railroads and Amtrak were ready to be declared fully implemented by the end of 2018. But the FRA regulations stipulated that no one could be fully implemented until everyone was fully implemented. Therefore, the host railroad, whether it was a freight railroad or Amtrak, could not ask—asked, but was denied being declared fully implemented because their tenant railroads were not fully implemented. And I think Mr. Naparstek is being kind to one of his tenants by not going further down that path.

And—but it is important, I think, for this committee, and, as I read some of the media outlets, for the media to understand that there were railroads ready to be fully implemented 100 percent operational, and were denied that and were forced to apply under the alternative schedule.

Mr. DENHAM. Thank you, Mr. Hamberger. Final question to Mr. Weber.

Mr. NAPARSTEK. If I could—I am sorry, sir, but if I could answer Congresswoman Esty's original question, so for Amtrak tracks in Connecticut we will be 100 percent in operation by 12/31. For CTDOT, they will be PTC-operable completely by the deadline. And Metro-North will be filing for an alternative schedule.

Mr. DENHAM. Thank you.

Mr. Weber, you are recognized for 5 minutes.

Mr. WEBER. Thank you. Gosh, I don't know where to start.

Mr. Batory, quick question for you. I was here earlier, and had to go to another hearing. You—and I have been on this committee now—what is this, my second year? So you mentioned there were

two laws, 2008, 2015 in some of your remarks. And then you went through 2008 was four pages long, and then you went from there to the number of rules, and from there to the safety—can you give me those stats again? Do you have them handy? I will come—

Mr. BATORY. Yes, Congressman. And just to give you some color as to why I sought this, when I heard the safety plans were 5,000 pages, I was a little taken back. So I said, “Well, let’s peel the onion back.” What got us to 5,000 pages?

So I said, well, tell me how thick was the statute that came out of Congress? In 2008 it was three pages; 2015 it was six pages. And then the RSAC [Railroad Safety Advisory Committee] process was engaged to develop the regs, and we came up with 45 pages of regs. And that percolated 190 pages of rulemaking, which then drove the implementation plans that are not that burdensome, but they are living documents and have to be maintained forevermore—150 to 200 pages. But then you get to the safety plan, and it is 5,000 pages.

Mr. WEBER. OK. So in those rules and all those pages that you cited, Mr. Hamberger makes a very good point. There was no provision for tenant rail lines, I guess, railroads. And I am not quite sure how to provide for that, because, you know, it is true that Amtrak may be on board, for example, but if you have got tenants responsible, are they to be held liable for their tenants under those rules?

Mr. BATORY. Here is what evolved. There are three railroads, and the facts are there, so I feel comfortable in revealing them.

You have two commuter railroads that are extremely far ahead of the curve: Metrolink and SEPTA. The two Class I’s are Burlington Northern Santa Fe and Union Pacific, as far as maturity into PTC. Burlington Northern Santa Fe realized that they were going to have their entire railroad PTC-equipped, their locomotives are equipped, OK? So naturally, if you are working at Burlington Northern you would say, well, I am done, OK?

But they have thousands of miles on their railroad that they offer, OK, for use by tenants, some of them utilized by Class I’s. So, as a result, they wanted to be recognized as fully implemented. And we said you can’t get fully implemented, because you have tenants out there that aren’t going to be PTC-equipped.

And let’s talk about Chatsworth. That was a Metrolink train and a Union Pacific train, a tenant and a host got together. So if you would have declared that piece of railroad—had PTC been in effect back then—and said you are fully implemented, but one of those two weren’t equipped, you would have still had the crash. So that is why it was written that way.

So what we told Burlington Northern Santa Fe, we said, all right, there is the rule, the reg, the law, but there is also the spirit and the intent of all that. So that is when we suggested get all your tenants to file for alternative schedule, OK, and—

Mr. WEBER. Not an extension, but an alternative—

Mr. BATORY. Just get the tenants—

Mr. WEBER [continuing]. Schedule, as pointed out.

Mr. BATORY. Get the tenants to file for alternative schedule, and then we can recognize you as being fully implemented, recognizing

those tenants are not fully implemented yet, because they filed for alternative schedule. They elected not to——

Mr. WEBER. Why?

Mr. BATORY [continuing]. When we offered. I do—I can't answer that. Burlington Northern——

Mr. HAMBERGER. Well, clearly, they had no jurisdiction over their tenants——

Mr. BATORY. I have——

Mr. WEBER. Well, that is what I said, you are making them responsible.

Mr. BATORY. But he——

Mr. NAPARSTEK. Well, there is two things.

Mr. BATORY. So——

Mr. NAPARSTEK. Jurisdiction, as well as you can't test interoperability on a tenant that isn't ready to test——

Mr. WEBER. That is a little tough.

Mr. NAPARSTEK. We can't prove 100 percent—we are 100 percent ready, but I can't prove on Amtrak's system 100 percent interoperability without my tenants being ready.

Mr. WEBER. That is a little tough.

Mr. NAPARSTEK. Therefore, I need to work with my tenants, and we will be as aggressive as possible to get them PTC-operable as quickly as possible.

Mr. WEBER. I am running out of time and I am the only thing that stands between this committee and lunch, so I need to hurry.

Ms. Fleming, you said something that got my attention. You said that there were 32 of the 40, but that the others—the 8 were seeking an extension based on—so that they could come up with, was it substantive criteria? Was that what you said?

Ms. FLEMING. Right. So within the statute, FRA has the ability to allow railroads to apply for—instead of meeting the current criteria for an extension, substitute criteria.

Mr. WEBER. Oh, substitute criteria.

Ms. FLEMING. Substitute. So, 16 are going to seek an extension using substitute; 12 of the 16 want to be able to have approval for initial field testing, which is really in the early stages.

And my point was that, for those 12 railroads, we are a little concerned that they may not even meet 2020, because at that juncture you are still kind of working through a lot of bugs, the system may not be mature, and the railroads that are further along, such as my colleagues at the table, it has taken an average of 2 years from initial testing to RSD. So we are a little concerned that some of those railroads—granted, sometimes extensions—you know, I mean your schedules work out fine. But sometimes there is, you know, unforeseen circumstances. So we are a little concerned about those 12 railroads and where they are at this point.

Mr. WEBER. OK. Well, I am past my time, Mr. Chairman. I appreciate your indulgence, I yield back.

Mr. DENHAM. Thank you, Mr. Weber.

Mr. Shuster?

Mr. SHUSTER. Well, I just want to say a final note. Look, this is an incredibly complicated situation here. Deploying technology that is not fully developed, and we are going through the process, we have got some folks that are—obviously, the freights are ready to

go, and you have got others that aren't. So this is incredibly complex. It should be a lesson to all of us about technology and going forward, no matter what the industry is, and how we have to make sure that, as Mr. Batory said, it has got to be a collaborative effort.

These companies don't want to have dangerous—they don't want—they want to have the safest possible system they can have, and I don't believe anybody is trying to cut any corners, but it is just very complicated. So I just wanted to say that.

But also, I wanted to say to my good friend of 40 years, Ed, I did the calculation. Forty years I have known Ed Hamberger. He has been a great friend. He has done an outstanding job, I believe, at running AAR for the last 20 years.

You have been a great ally at times and have been a formidable opponent at times, and I appreciate that. And whoever has to fill your shoes at AAR has got some really, really big shoes to fill. So—but I wish you the best. And whoever comes after you, I wish them the best, having to go after Ed Hamberger.

That being said—I am not done yet, Mr. Chairman—I came here today because this is an incredibly important hearing. But I would not miss the final performance of Ed Hamberger.

Now, I went through the—went through, looked at the testimony, I tried—

Mr. HAMBERGER. I am delighted to hear that this is my final performance.

[Laughter.]

Mr. SHUSTER. At least before this committee, I should say.

Mr. HAMBERGER. Chairman Denham may have different ideas, but anyway—

Mr. SHUSTER. Well, at least before this committee, at least when I am here. Maybe Denham and I won't be here the next time.

So—but I just wanted to say I looked through the record, I tried to find some way to grill you today, because with a name like Hamberger, grilling you is absolutely appropriate.

[Laughter.]

Mr. SHUSTER. But I couldn't, because I agree with you, that the Class I's have done their work, have done their job. And so we are in a situation here that, as I said, it is complicated. But again, you have done a great job for the last 40 years.

I appreciate all of you being here. And again, we are going to continue to work forward. And I know in the able hands of Chairman Denham, he will make sure that we all come together and we have a great ending when it all comes together.

Mr. HAMBERGER. Mr. Chairman, right back at you. Of course, you have been a great Member of Congress, a good friend, and a great chair. And whoever follows in your footsteps will have a great legacy to live up to, as well.

Mr. SHUSTER. Thank you very much.

And if I could ask one more question, Mr. Denham, when I finish here, please do not recognize Ed Hamberger again, because he always tries to get in the last word.

Mr. HAMBERGER. Can he just say, "Well done, Hamberger"?

[Laughter.]

Mr. SHUSTER. Great job, Ed.

I yield back.

[Laughter.]

Mr. DENHAM. Last word of this committee is PTC, get it done.

With that, if there are no further questions, I would like to ask unanimous consent that today's record of the hearing remain open until such time as our witnesses have provided answers to any questions that may be submitted to them in writing, unanimous consent that the record remain open 15 days for additional comments and information submitted by members and witnesses.

Without objection, so ordered.

I would like to thank our witnesses again today.

If there are no other comments, the committee stands adjourned.

[Whereupon, at 11:58 a.m., the subcommittee was adjourned.]

SUBMISSIONS FOR THE RECORD

TESTIMONY OF FLOYD MASON, PRESIDENT, BROTHERHOOD OF RAILROAD SIGNALMEN

Dear Chairman Shuster and Ranking Member DeFazio:

My name is Floyd Mason. I have served as Vice President East for the Brotherhood of Railroad Signalmen (BRS) for many years, which included the role of chairman on our training committee. During our recent Convention, I was elected President of the BRS and assumed the office on October 1, 2018. Prior to my full-time union assignment, I worked on Class I railroads as a technical employee, which involved extensive work on a large signal installation initiative—the installation of centralized traffic control systems that in many areas changed operation from a local operator to a remote centralized control facility. The BRS represents signal employees who install, maintain and test the signal systems responsible for the safe movement of trains and protection of the public, including Positive Train Control (PTC) which overlays and is governed by the existing signal system.

On September 13, 2018, I was accompanied by BRS Legislative Representative Leonard Parker while attending the Transportation and Infrastructure Committee (Committee) hearing titled, “The State of Positive Train Control in the U.S.” While at the hearing, certain comments and assurances were made either by the industry or by Federal Railroad Administration (FRA) Administrator Ronald Batory regarding the status of PTC training for Railroad Signalmen. The theme was Class I Railroads have completed, or nearly completed, the required and necessary training of Railroad Signalmen in aspects of PTC. More specifically, the implication is that the training of Railroad Signalmen required by the Rail Safety Act of 2008 is complete, meeting the requirements of the law and FRA requirements. The indication was that this training provides Signalmen with what they need to properly perform their duties and provides for the safety of the public and rail employees regarding PTC—with these comments I plan to challenge that notion.

The work of Railroad Signalmen, other front-line rail workers, the industry, the FRA, and this Committee has been truly impressive. Without question, the installation of PTC is the largest application of life-saving and operational-efficiency technology in the history of railroad signaling. The process has taken time, arguably too much time, but the scope and level of technical advancement in railroad signaling is impressive and remarkable. My comments are limited to the training of Signalmen on Class I railroads. The Class I railroads appear to be the yardstick that the T&I Committee is using for progress, and rightfully so.

The training provided for Railroad Signalmen is inadequate and will not meet the high-standard necessary to ensure the safe, proper, and reliable operation of these sophisticated systems. As an anecdote, at Local meetings where I converse with Signalmen, I am often met with chuckles or concerns when I raise the subject of proper training for PTC systems. There has been a real effort to check off all Signalmen as PTC trained, unfortunately what is needed and what has occurred are vastly different. I raised this issue personally and directly with Administrator Batory at the BRS 52nd Regular Convention in August where he was a speaker. I sincerely believe he reports on the progress of this and other PTC related issues based on reports provided by the industry. It is certainly understandable that the reports are not verified by field visits the way that FRA Testing Requirements under 49 CFR Parts 234 and 236 are verified. Generally speaking “PTC Training” in some cases is a quick briefing describing what the technology is and what it is intended to do. Signalmen who must troubleshoot the system in the middle of the night after the system fails, replace defective components, test the system for proper operation, and return the system to normal operation must be more extensively trained than the generic overview provided to those who simply need to know what the system is or its purpose.

I will provide two examples demonstrating that the necessary training has not occurred, in part due to the railroads canceling their overall signal training effort. I

will cite two examples: (1) CSX which canceled its very effective training development program and (2) Norfolk Southern (NSR) which canceled all training to Journeymen over a dispute involving expense reimbursement. These two railroads ended the programs that were working towards the proper training of Signalmen during the very time that the railroads were reporting that great strides were being accomplished in this area.

Example 1: On CSX, signal training beyond the existing training, which is extensive, is developed by a joint labor-management process. This joint process was canceled when Hunter Harrison came in as CEO and the process has not resumed. The facility known as the REDI Center, a centralized CSX training facility, is a ghost town compared with its past vibrancy. There is no other process or location that has taken the place of the joint training development process or training facility. In the previous joint training development process, subject matter experts mostly made up of Signalmen were sometimes accompanied by vendors or managers. In this instance, cooperation from the railroad managers responsible for standards and instructions, signal management, technical writers and various experts in visual aid came together and developed training procedures for new equipment. The procedures led to testing standards, along with a written manual at an appropriate technical level for Signalmen, which contained illustrations and technical requirements. After this effective program was canceled and no replacement put in its place, all Signalmen were checked off as qualified on PTC as reported to FRA and your Committee.

We know from implemented training on many previous examples of new technology that this is simply not possible on the scale required with the time involved and without the support of the previous training process or facility. We can provide real examples of technical training developed for new signal equipment; and we challenge CSX to provide examples of technical training for PTC installation, maintenance, and repair. Your Committee can then compare the products.

Example 2: Recognizing the need for PTC Training and other “Journeyman Training” the BRS worked jointly with NSR signal management in 2017 and 2018 to re-develop Journeyman Training. This effort included the professionals at the McDonagh Training Center, a NSR training facility near Atlanta, Georgia. This training, however, did not make it to Signalmen beyond an initial pilot group; the Pilot was intended to test its effectiveness of the new program.

After the initial pilot program, a dispute developed about reimbursement of travel expenses for the Signalmen attending the facility. We spent time in 2017 and 2018, resolving those conflicts. We have now developed a 2nd Pilot Program with an agreed upon plan to reimburse travel expense for those that attend. The 2nd program is scheduled to begin the first week of October 2018, for one small class of 16. It is our hope and intention that we will begin to train more Signalmen in 2019.

The training, which is limited, is an excellent start to what we should be doing across the nation. It takes a week of classroom training using simulators and covers important aspects of PTC. With a class size presently limited to 16, and with less than 52 available weeks in the year, it will be years before this effort will reach all 1,300 signalmen. Adding to the limited availability of training resources is the requirement to train newly hired employees. The new hire training process takes 43 weeks, and not all training is performed at the McDonagh Center, but never-the-less impacts availability of the facility to train Signalmen on PTC.

Again, the Signalmen on NSR have not, and will not be properly trained on PTC for some time.

I attach to this statement a copy of our Pilot Training Program on NSR and the proposal that led to it. If you need supporting documentation pertaining to the training that was canceled over disputes, that information can be provided.

I will look for verification of the limited or nonexistent nature of PTC Training on the other remaining Class I railroads and provide it if you are interested.

This testimony/letter was prompted by the misinformation, Leonard Parker and I witnessed during the September 13, 2018, T&I hearing, that is being shared with your Committee. Additionally, there was a private comment made by a guest, who I believe was there to support the Association of American Railroads (AAR)—this guest assured us that PTC training really was accomplished. We knew better and felt compelled to bring this to light.

Finally, the work of your Committee and all those involved, notwithstanding the shortfall on this most important issue, is to be commended, but it can't be left as fact that Signalmen are properly trained on PTC Systems when it is not true.

Journeyman/Advanced Training—2018 Pilot Program 5-21-18

There are two available openings for Journeyman Training in calendar year 2018: August 27 to 31, 2018 and October 1 to 5, 2018. We have had a series of successful Pilot Programs for the ERN, N&W and Southern before 2018. The training, particularly the portions that had to do with radio equipment testing using a watt meter, and the PTC Initialization using PTC equipment in a trailer were helpful and informative. A dispute developed with respect to what the proper expense should be to get signal employees to and from the McDonough Training Center. Some were reimbursed zero while others were reimbursed overtime, penalties and expenses.

A second pilot program for dealing with travel time and expense will be arranged for volunteers in the two available weeks for 2018, using existing rules and training to the extent possible. This second Pilot Program is outlined below:

- Reduce training program to fit within Tuesday, Wednesday and Thursday of each week.
 - Focus on PTC related training and new training modules
- Longer term, look for ways to take more conventional modules, for example switch machines and put them into either a CBT module, a module for remote video, or train the trainer delivery method
- All Signalmen (including those currently assigned four ten-hour days) attending training will be converted to a 5-day 40-hour schedule Monday through Friday for the week of training
- Travel will occur on Monday and Friday. NSR will pick the mode of travel from among: company vehicle, private automobile, or airline. If private vehicle, mileage will be reimbursed, if airline, NSR will provide ticket.
 - Transportation to and from airport will be either company vehicle, or private auto with mileage reimbursement.
 - Transportation from airport to Training Center will either be arranged by NSR or reimbursed as actual necessary expense.
 - Hotels will be provided, and meals will be reimbursed at the standard per diem rate.
 - Transportation from the hotel to the Training Center will be provided by NSR.
- Consistent with travel arrangements, briefings may be held on Monday afternoon or Friday morning, schedules permitting.
- This second Pilot Program will be voluntary, for examining the scheduling and expense reimbursement aspects of training, while concentrating on several key topics related to PTC or timely changes in railroad signaling.

Next step review potential for schedule with McDonough Training Center, Joe Lee, for feasibility to develop schedule before August. (based on conversation it is feasible) Review transportation for Tuesday, Wednesday, Thursday classes. (arranged by Signal for past classes) Exit survey of volunteers and instructors for suggested changes to arrangements with the goal of keeping travel expense and time away from home manageable. The results of the second pilot will be informative for future training including FRA parts 243 and 236 training.