United States Government Accountability

Testimony

Before the Committee on Commerce, Science, and Transportation, U.S. Senate

For Release on Delivery
Expected at 10 a.m. EDT
Wednesday, June 19, 2013

RAIL SAFETY

Preliminary Observations on Federal Rail Safety Oversight and Positive Train Control Implementation

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Chairman Blumenthal, Ranking Member Blunt, and Members of the Committee:

We appreciate the opportunity to participate in this hearing to discuss the Federal Railroad Administration's (FRA) rail safety oversight activities. The rail network is one of America's safest modes of transportation, although several recent rail accidents, including the Metro-North commuter rail accident in Bridgeport, Connecticut, the collision of BNSF and UP trains in Chaffee, Missouri, and the collision of a CSX train and a truck in Rosedale, Maryland, have reinforced the need for constant effort from both the private and public sectors to ensure that rail transportation remains safe for passengers, the public, and railroad employees. My statement will discuss our ongoing reviews of FRA's rail safety oversight and the implementation of positive train control, a communications-based system designed to prevent train accidents caused by human factors.

This testimony provides our preliminary observations from our ongoing work, being performed at the request of this committee and other Members of the Senate, regarding: (1) FRA's framework for safety oversight, (2) existing and emerging challenges to rail safety, and (3) PTC implementation. Our preliminary assessments of FRA's rail safety framework and the quantitative tools FRA uses to implement that framework are based on our reviews of FRA documentation and interviews with FRA headquarters and regional officials. In addition, we interviewed state rail safety officials and freight railroad officials from selected Class I, II, and III railroads.[1] We selected the railroads based on the class of railroad (as a proxy for size), types of railroads (long distance versus local service or a railroad that serves a small area such as a port or rail yard), and type of ownership (publicly held, privately held, or owned by a public agency) to get a range of different kinds of freight railroads. For our assessment of PTC implementation, we reviewed documents and interviewed officials from FRA and railroad associations, the four largest freight railroads, commuter railroads that were selected based on PTC implementation status and ridership levels (among other things), and Amtrak. We also selected PTC suppliers and independent PTC experts

[1]The Surface Transportation Board classifies railroads based on annual revenues. As of 2011 (the last year of data available), Class I freight railroads are those railroads that earn more than $433 million annually, Class II earn from about $35 million to $432 million annually and Class III railroads earn less than about $35 million annually.

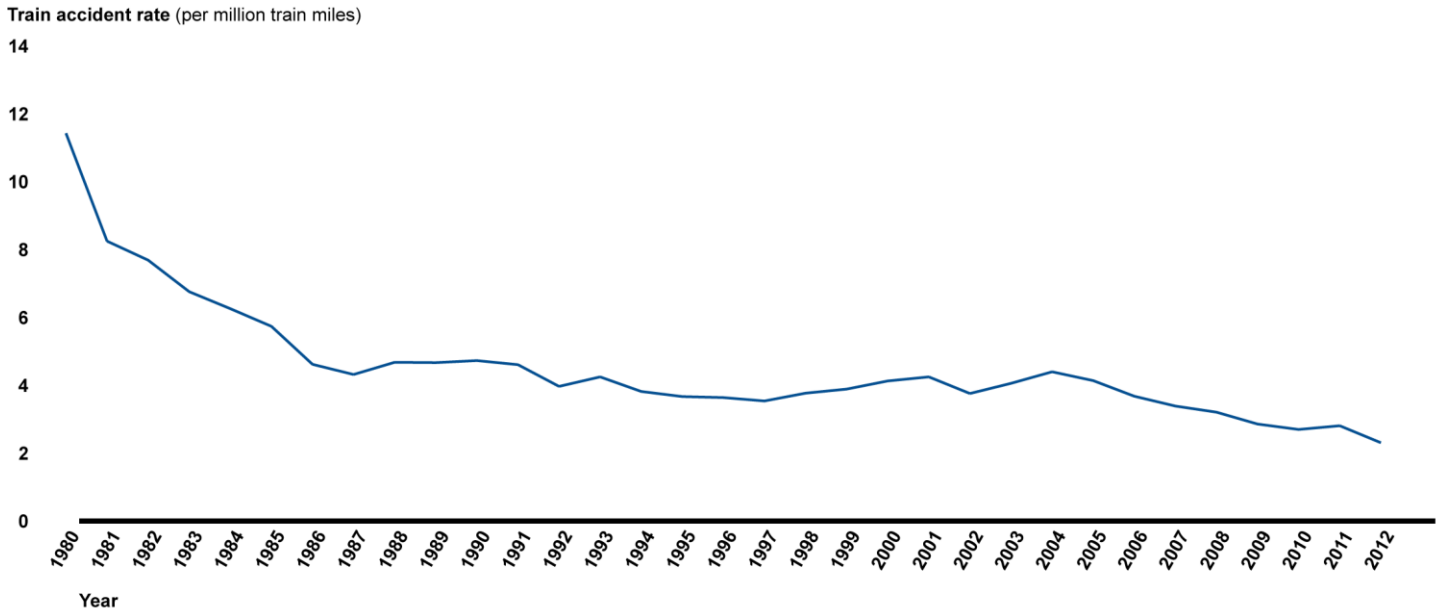
based on their involvement with PTC and recommendations from FRA, industry associations, and others.

We conducted our ongoing work in accordance with generally accepted government auditing standards. We provided a draft copy of this statement to FRA for their review. The agency had no comment. We plan to report the final results of our reviews in the fall of 2013.

Background

According to FRA data, 2012 was the safest year in railroad history. Overall, rail safety—measured by the train accident rate per million train miles—has improved markedly since 1980, as shown in figure 1. In addition, the accident rate dropped by almost 50 percent from 2004 to 2012.

Figure 1: Train Accident Rates per Million Train Miles, 1980 to 2012



Source: FRA.

Even with the significant reduction in accident rates, however, roughly 300 people were injured and 10 people were killed in train accidents on

average each year, from 2003 to 2012.[2] Further, recent rail accidents underscore the importance of continued, consistent efforts to ensure rail safety.

FRA provides regulatory oversight of the safety of U.S. railroads, both passenger and freight. FRA develops and enforces regulations for the railroad industry that include numerous requirements related to safety, including requirements governing track; signal and train control systems; grade-crossing warning device systems; mechanical equipment, such as locomotives and tank cars; and railroad-operating practices. FRA also enforces hazardous materials regulations that relate to the safe transportation of such materials by rail.

The Rail Safety Improvement Act (RSIA) of 2008 was the first authorization of FRA's safety activities since 1994 and is due to be reauthorized in 2013.[3] RSIA overhauled federal rail safety requirements by directing the FRA to, among other things, promulgate additional new rail safety regulations and guidance in areas such as railroad risk reduction plans, track inspections standards, and highway-rail grade crossing safety.

RSIA also required railroads to develop and submit a plan to FRA for implementing a PTC system on rail lines that carry intercity or commuter passengers or toxic-inhalation-hazard cargo by December 31, 2015.[4] Under RSIA, FRA is responsible for approving railroads' PTC implementation plans and certifying PTC systems prior to installation. PTC is a communication-based system designed to prevent some accidents caused by human factors, including train-to-train collisions and derailments caused by exceeding safe speeds. It is also designed to prevent incursions into work zones and movement of trains through switches left in the wrong position. By preventing trains from either entering a segment of track occupied by another train or moving through an improperly aligned switch, PTC could prevent accidents such as the

[2]These figures do not include highway-railroad grade crossing or trespasser accidents.

[3]Pub. L. No. 110-432, div. A, 122 Stat. 4848.

[4]Failure to complete PTC system installation on track where PTC is required prior to the deadline is subject to a $16,000 penalty per violation and $25,000 per willful violation. See 49 C.F.R. Appendix A to Part 236.

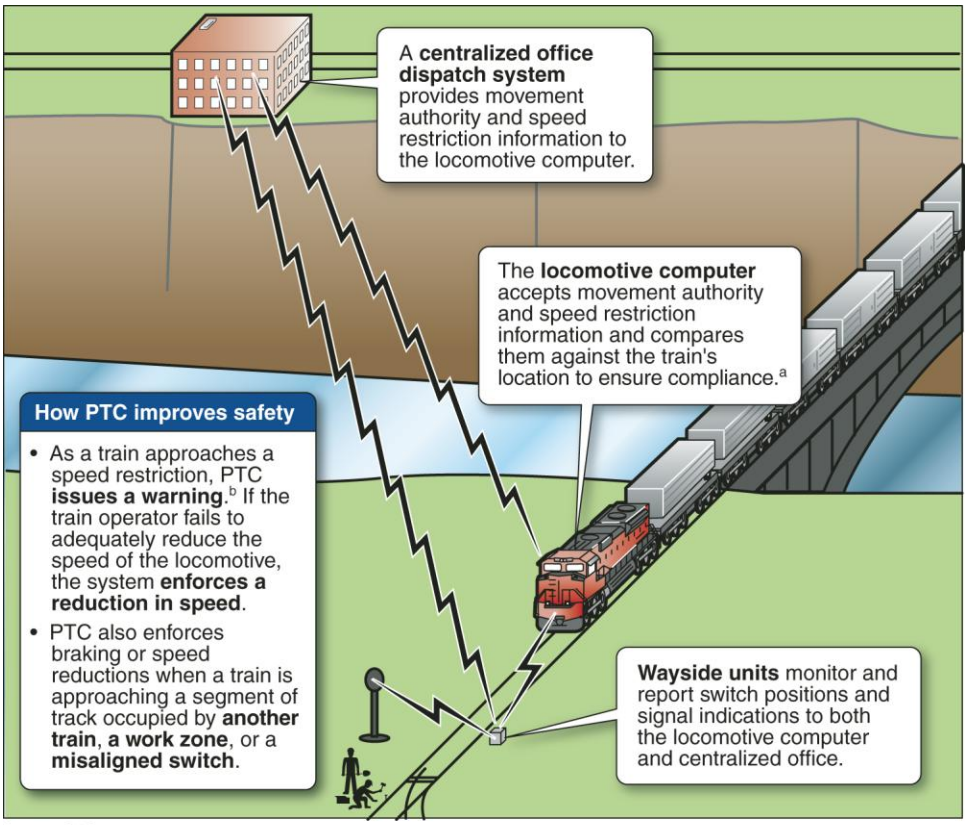
one in the Chatsworth neighborhood of Los Angeles, California.[5] Railroads that are required to implement PTC can choose different PTC systems; however, railroads' PTC systems must be interoperable. This means that the components of different PTC systems must be able to communicate with one another in a manner to provide for the seamless movement of trains as they cross tracks owned by different railroads that may be using different PTC systems.[6,7]

[5]In September 2008, a commuter train operator missed a red signal, causing the train to collide with a Union Pacific freight train, resulting in 25 deaths and over 100 injuries.

[6]Major freight railroads in the United States are implementing Interoperable Electronic Train Management System (I-ETMS) and Amtrak, which provides intercity passenger rail and predominantly owns the Northeast Corridor track that runs from Washington, D.C., to Boston, is implementing Advanced Civil Speed Enforcement System (ACSES). Although ACSES and I-ETMS are functionally the same, they represent different technical approaches.

[7]GAO, *Rail Safety: Federal Railroad Administration Should Report on Risks to the Successful Implementation of Mandated Safety Technology*, GAO-11-133 (Washington, D.C.: Dec. 15, 2010) and Federal Railroad Administration, *Report to Congress: Positive Train Control Implementation Status, Issues, and Impacts* (August 2012).

Figure 2: Basic Operation of a Positive Train Control (PTC) System



Source: GAO.

[a]Train location information is determined through various methods depending on the specific PTC system, including through satellite-based positioning systems and sensors installed along the track.

[b]Although RSIA does not require PTC systems to issue such warnings, the PTC systems that most railroads are implementing will do so.

FRA's Rail Safety Framework Includes Data to Inform Its Rail Safety Oversight Efforts but Faces Potential Oversight Challenges

FRA's Oversight Framework Primarily Uses Federal and State Inspectors to Oversee Railroad Safety Efforts

Our work to date indicates that FRA primarily monitors railroads' compliance with federal safety regulations through routine inspections by individual inspectors at specific sites on railroads' systems. This inspection approach focuses on direct observations of train components, related equipment, and railroad property—including the track and signal systems—as well as operating practices to determine whether they meet FRA's standards. Inspectors also examine railroads' inspection and maintenance records. FRA's inspectors generally specialize in one of five areas, called inspection disciplines: (1) operating practices, (2) track, (3) hazardous materials, (4) signal and train control, and (5) motive power and equipment.[8] Inspectors typically cover a range of standards within their discipline during inspections. FRA's policy is for inspectors to encourage railroads to comply with federal rail safety regulations voluntarily. When railroads do not comply voluntarily or identified problems are serious, FRA may cite violations and in certain instances take enforcement actions, including the assessment of civil penalties, to ensure compliance.[9]

Our preliminary work has found that thirty states also employ railroad safety inspectors, who participate in a partnership program with FRA to

[8]Inspectors in this specialty inspect railroad locomotives, passenger and freight cars, and their safety appliances such as air brakes.

[9]For fiscal year 2012, FRA's final civil penalty assessments and settlements totaled about $16.6 million for about 6,400 violation reports.

conduct safety oversight activities, supplemental to FRA's activities, based on FRA rail safety regulations and to enforce state railroad safety laws. FRA trains and certifies state inspectors and includes them in its inspection planning efforts. However, FRA's relationship and coordination with each state is unique. For example, according to one state rail safety administrator we talked to, the federal and state track inspectors have divided one state's territory to ensure that the inspectors' territories do not overlap. In addition, an FRA regional administrator mentioned that while his FRA and state inspectors' territories overlapped, effective coordination between inspectors avoids duplicative inspections. According to FRA officials, while state inspectors ensure compliance with state requirements, state inspectors are also responsible for ensuring compliance with federal safety regulations.

In addition to federal and state inspectors, the railroads have their own inspectors who are responsible for ensuring that railroad equipment, track, and operations meet federal rail safety standards. Each railroad has its own inspectors or contracts with third parties to conduct the required inspections depending on the railroad's resources and FRA-mandated inspection responsibilities.

FRA is a small agency relative to the railroad industry, making the railroads themselves the primary guarantors of railroad safety. Based on our work to date, FRA has about 470 inspectors in its headquarters and regional offices, in addition to about 170 state inspectors.[10] In contrast, the U.S. railroad system consists of about 760 railroads with about 230,000 employees and 200,000 miles of track in operation. FRA is also responsible for developing and enforcing regulations for commuter railroads and Amtrak.[11] Amtrak and commuter railroads operating outside of the Northeast Corridor operate largely over freight railroad tracks and carry over 670 million passengers a year over 23 billion miles. The FRA works with railroads to get their input on proposed regulations and rules through the Railroad Safety Advisory Committee (RSAC) process.[12]

[10]Six of these states (California, Illinois, Ohio, Pennsylvania, Texas, and West Virginia) comprise over 50 percent of the total number of state inspectors.

[11]There are currently 28 commuter railroads.

[12]FRA established the Railroad Safety Advisory Committee (RSAC) in 1996 to develop new regulatory standards, through a collaborative process, with all segments of the rail community, including railroads, shippers and other stakeholders, to fashion mutually satisfactory solutions on rail safety regulatory issues.

Several railroad officials we spoke with thought that the RSAC process was an improvement over the prior process, that they believe had been less collaborative and did not promote discussions among FRA, the railroads, and labor unions to share and understand each other's views on proposed federal railroad safety regulations.

FRA Targets Its Inspections Based on Analyses of Past Accident and Inspection Data and Other Information

In 2006, FRA implemented a risk-based approach, using its National Inspection Plan (NIP), to allocate its limited inspection resources to ensure rail safety. The NIP consists of three elements: (1) a baseline plan that establishes safety goals for each railroad and state, (2) review and adjustment by regional administrators, (3) monitoring and evaluation of inspection activity.

The NIP's baseline plan attempts to minimize the predicted number and severity of railroad accidents given the number of available FRA inspectors in each FRA region. The quantitative model uses data including: 1) the most recent 3 years of accident data from reports that railroads are required to file about accidents that occur on their tracks; 2) data from FRA's inspection activity; and 3) information on railroad activities such as train miles and other data, to determine the scope of what FRA's inspectors should inspect in a given year.[13] In the middle of each calendar year, FRA updates the NIP with new accident data to estimate where the highest safety risks are and uses the results to create annual inspection targets for each inspector.

Our preliminary work indicates that after the baseline is established, FRA's regional management propose modifications to the inspection targets produced for each region using their judgment and knowledge of which railroads or disciplines may require more FRA oversight than the NIP's model indicates. Subsequently, FRA allows for a mid-year correction of the NIP, based on input from FRA's regional management. FRA regional administrators we spoke with indicated that this flexibility allows them to accommodate new or emerging rail safety risks by deviating from the original NIP targets. For example, they stated that they sometimes re-allocate inspectors to railroads that have had recent accidents, or because inspectors indicate a need for more oversight at a

[13]Railroads are required to report monthly accident data within a month of the accident occurring and it may take 2 to 3 more months for FRA to review the information and make it available for use in the NIP. The NIP excludes highway-rail grade crossing and trespasser accidents from its analysis.

certain railroad based on assessments made during their regular inspection duties. Additionally, the effects of hurricanes, storms, or prolonged periods of adverse weather, such as heat or cold that could cause track failures, may require the reallocation of inspection resources. Throughout the year, FRA headquarters and regional management monitor the inspection activities against the modified inspection baseline to determine if the inspection targets are being met.

FRA has also developed the Staffing Allocation Model (SAM), which is a planning and evaluation tool used to assess its inspection resources from a nationwide perspective. Our work to date shows that FRA uses the SAM to establish targets for the number of inspectors in each FRA region and inspection discipline. In using the targets to help allocate and balance staff among disciplines and regions, FRA expects to minimize the resulting casualties and estimated costs of train accidents. FRA uses the SAM results to determine where they may need to adjust the number of inspectors in a given region and discipline. FRA rebalanced its workforce using the SAM model in 2007 and officials stated that more recent SAM results have not indicated the need for major movements of inspectors between regions or disciplines. However, FRA officials stated that when the SAM has shown a change in the distribution of their inspectors they are somewhat constrained from implementing the model's results due to budget constraints. FRA officials also told us that while the SAM model has been refined based on what they have learned from making improvements to the NIP, the SAM is not designed to take into account certain changes—such as increasing freight train volume or accidents in a particular region—as the SAM uses past accident data to provide a baseline for the nationwide distribution of its inspectors. FRA officials stated that they handle those types of changes on an as-needed basis through temporary detail assignment of FRA inspectors from other regions or headquarters.

In addition, our preliminary review indicates that FRA regional administrators also can provide input on the model's results based on their views on how many inspectors the region needs. However, FRA regional officials we talked to stated that the staffing decisions based on SAM results do not necessarily align their inspectors with their perspective of the needs in their region nor does it take a region's geography into account. While FRA headquarters officials anticipate that there may be minor variations from SAM's targets as a result of natural turnovers of inspectors (e.g., retirements), they do not believe that these variations will have long-term impacts on FRA's safety activities in the regions. However, regional administrators expressed concern over the

staffing pressures this can create. For example, one FRA regional administrator stated that when the staffing decisions did not provide for a replacement for a certain discipline, he was forced to cover that discipline's inspection load with inspectors from other states for 3 years until a replacement could be approved, hired, trained, and qualified.

As we continue our on-going work on rail safety oversight, we will further assess how FRA officials use these tools to accommodate changing rail safety risks and allocate inspectors across regions and inspection disciplines.

FRA Faces Several Potential Challenges to Its Rail Safety Oversight Mission

Based on our work to date, we have identified several potential challenges affecting FRA's rail safety oversight, including lack of a final rule requiring the submission of Risk Reduction Plans by specified railroads, lack of succession planning to ensure sufficient staff numbers and expertise, and other ongoing and emerging challenges.

Risk Reduction Plans

RSIA required FRA to develop a rulemaking requiring certain railroads to submit risk reduction plans, within 4 years of enactment, which was October 2012.[14] Our preliminary work has identified several reasons why a final rule has not yet been issued, according to FRA, including the need to resolve the issue of protection of sensitive business and safety information in the railroad's risk reduction plans. FRA officials told us that these plans would allow them to have a more proactive view of rail safety for these railroads that will complement FRA's current compliance-based approach. FRA officials also told us that they anticipate issuing a final rule in September 2014 and that they expect that the railroads will have risk reduction plans in place by 2016.

Succession Planning

Our work to date has found that FRA does not yet have a specific plan to replace its aging inspector workforce. According to FRA officials, in the next 5 years, 150 of FRA's 470 inspectors (about 32 percent) will be eligible to retire. FRA officials told us, however, that they have been able to find and hire qualified candidates in the past. However, other FRA

[14]Specifically, RSIA required all Class I freight, intercity passenger, and commuter railroads (as well as any railroad whose safety performance was determined to be inadequate by the Secretary of Transportation) to develop and submit plans for DOT to review that would identify and propose to manage the rail safety risks on the railroad, such as rail safety technology and human fatigue management.

headquarters officials and regional administrators we spoke with stated that replacing qualified inspectors is difficult, especially for the signal discipline, and getting inspectors fully qualified takes time. For example, FRA regional officials stated that it takes about 1 to 2 years to find, hire, train, and certify a new experienced inspector and 3 to 4 years to get an inexperienced trainee certified by FRA as a qualified inspector. Additionally, FRA officials stated that budget constraints may prohibit their current practice of hiring new inspectors before retiring inspectors leave so that some overlap can occur to facilitate the transfer of knowledge.

Other Challenges

Our preliminary work has identified several other ongoing and emerging rail safety challenges that FRA faces.

- *The effects of weather on railroad operations are an ongoing challenge.* FRA and the railroads continuously keep abreast of adverse weather conditions that can cause accidents, such as high temperatures that can cause tracks to go out of alignment and cause a derailment. FRA has issued several weather-related regulations concerning tracks, operating practices, and railroad equipment, and the railroads we spoke with adjust their operating practices to account for adverse weather.

- *All rail safety stakeholders face the continued challenge of trying to reduce highway-rail grade crossing and trespasser incidents.* Reducing these kinds of accidents represents a different challenge to FRA's current rail safety framework. Rail safety stakeholders stated that this involves educating the general public about the potential safety hazards that trains represent to cars, trucks, and pedestrians at grade crossings as well as cooperating with several other federal, state, and local government agencies that have responsibility for funding road projects or closing those crossings. Changes to freight flows, such as the recent increase in train and truck traffic experienced due to increased gas and petroleum drilling in the upper Midwest, can add train or truck traffic to previously low traffic areas increasing the risk of highway-railroad grade crossing accidents.

- *New technologies, such as PTC systems, are another challenge that FRA will have to incorporate into its rail safety oversight framework.* For example, because PTC systems are extremely complex command, control, and communications systems, the FRA believes it will require a specialized inspector workforce—which FRA currently does not have—to provide adequate safety oversight.

As we continue our on-going work, we will further assess the extent to which FRA is incorporating these existing and emerging challenges into its safety oversight framework.

Most Railroads Report They Will Miss the 2015 PTC Implementation Deadline Due to a Number of Challenges

Our work to date indicates that most railroads will not complete PTC implementation by the 2015 deadline due to numerous, interrelated challenges caused by the breadth and complexity of PTC.[15] Of the four major freight railroads we included in our review,[16] only one railroad expects to meet the 2015 deadline. Of the three remaining freight railroads we spoke to, representatives believe they will likely not have PTC fully implemented until 2017 or later. Commuter railroads, which primarily operate on routes that are owned and managed by freight railroads, generally must wait for freight railroads and Amtrak to roll out their PTC systems. Our preliminary analysis indicates that freight and commuter railroads' inability to meet the 2015 deadline is due to a number of challenges.

- *Developing PTC components and PTC installation*: Some PTC components are still in development—most notably the PTC back-office server. One or more of these servers will be installed in over a dozen railroads' back offices and are needed to communicate vital information between the back office, locomotives, and waysides. According to the Association of American Railroads (AAR) and the railroads, back office system delays are due to system complexity, interfaces to other systems, and lack of supplier resources. Nearly all of the freight railroads included in our review anticipate they will not have a final version of the back office system until 2014 and have identified it as one of the significant factors preventing them from meeting the deadline. In addition, PTC installation is a time- and resource-consuming process. For example, railroads collectively will have to install approximately 38,000 wayside interface units.[17] According to AAR and freight railroads, the volume and complexity of installing these units is another significant reason most railroads

[15]In its May 2013 report, the Association of American Railroads noted that most railroads would not make the deadline.

[16]The four major freight railroads included in our review are BNSF, Norfolk Southern, CSX and Union Pacific—the largest Class I railroads based on operating revenue.

[17]Wayside interface units receive information from signals and in turn communicate signal aspect information to the locomotive directly or through railroads' back offices.

cannot meet the 2015 deadline. Our ongoing work has found that railroads have also encountered unexpected delays while installing PTC. For example, in May 2013, FRA officials told us the Federal Communications Commission (FCC) recently requested railroads to halt their construction of radio antennae towers to allow FCC to clarify regulatory oversight of the towers being installed for PTC.[18] According to FRA officials, FCC halted the construction of these towers to ensure proper installation procedures were being followed including consulting with either the tribal or state historical authorities prior to the towers construction and installation. FRA officials told us they did not anticipate this issue but are working with FCC to resolve it as quickly as possible. However, the impact of halting construction on the towers may result in additional delays in railroads' time frames.

- *System integration and field testing*: Our work to date indicates that successful PTC implementation involves several components working together, many of which are first-generation technologies being designed and developed. All components must function both independently and together, or the PTC system could fail. To ensure successful integration, multiple testing phases must be conducted by the railroads—first in a lab environment, then in the field—before components are installed across the network. Most of the freight railroads we spoke with expressed concern with the reliability of PTC and emphasized the importance of field testing to ensure the system performs the way it is intended. Multiple phases of testing must take place to identify any defects, which then must be analyzed and corrected, and the system re-tested. One railroad representative with whom we spoke said that the PTC system components behaved differently in some field tests than in the laboratory tests. Identifying the source of such problems, correcting them, and re-testing could further contribute to railroads not meeting the 2015 deadline.

- *FRA resources*: Although most railroads we spoke with said they have worked closely with FRA throughout the PTC implementation process,

[18]According to the FCC website, new tower construction must go through an FCC approval process and also a three stage review process depending on its location which includes: 1) environmental impact review, 2) state historical impact review, and 3) tribal land impact review. FCC notifies federally recognized tribes, Native Hawaiian Organizations, and State Historic Preservation Officers of proposed communications towers and allows these organizations to respond directly to the companies about their concerns.

some railroads cited concerns with FRA's limited resources and the agency's ability to help facilitate railroads' PTC implementation. Our work to date indicates that these concerns were based around two activities: field testing and certification. First, FRA officials must verify the field testing of PTC. However, FRA reported that it lacks the staffing resources to embed a dedicated FRA inspector at each railroad for regular, detailed, and unfiltered reporting on a railroads' PTC progress. To address the lack of staff to verify field testing, FRA has taken on an audit approach, whereby railroads submit field test results for approval as part of their safety plans.[19] Second, a PTC system must be certified before a railroad can operate it in revenue service. FRA certifies a PTC system by approving a railroad's safety plan. FRA set no specific deadline for railroads to submit the safety plans, and according to FRA, to date only one railroad has submitted a final plan, which FRA has approved. As FRA stated in its 2012 report to Congress, FRA's PTC staff consists of 10 PTC specialists and 1 supervisor who are responsible for the review and approval of all PTC system certification documentation for 38 railroads. FRA has expressed concern that railroads will submit their safety plans to FRA at roughly the same time. Our initial analysis suggests that this timing creates the potential that FRA's review of these plans will become backlogged, since each of the railroad's plans will consist of hundreds, perhaps thousands, of pages of detailed technical information. FRA officials told us that they are dedicated to the timely approval of safety plans and that their oversight will not impede railroads from meeting the deadline. However, railroads report that their time frames are based on a quick turnaround from FRA; if quick turnaround does not occur, it could further delay PTC implementation.[20]

Based on our work to date, it appears that commuter railroads face these same PTC implementation challenges as well as others. First, because commuter railroads are generally using the PTC systems developed by freight railroads and Amtrak, they are captive in many respects to the

[19]The PTC safety plan must include information about planned procedures for testing the system during and after installation, as well as information about safety hazards and risks the system will address, among other requirements.

[20]Railroads have developed common portions of the safety plan and submitted drafts to FRA for preliminary review to expedite final review. This way FRA staff will be familiar with portions of the plan that are common across plans before the finalized plan is submitted.

pace of development of these entities and have few means to influence implementation schedules. In addition, commuter railroads also face challenges in funding PTC implementation due to the overall lack of federal, state, and local funding available to make investments in commuter rail. According to the American Public Transportation Association, PTC implementation will cost commuter railroads a minimum of $2 billion. Commuter railroads are non-profit, public operations that are funded by passenger fares and contributions from federal, state, and local sources. Economic challenges such as the recession have eroded state and local revenue sources that traditionally support commuter rail capital expenses, and competing expenses such as state of good repair upgrades, leaving the commuter railroads limited in their funding to implement PTC.

Finally, commuter railroads report that obtaining radio frequency spectrum—essential for PTC communications—can be a lengthy and difficult process.[21] The FCC has directed commuter railroads to secure spectrum on the secondary market.[22] According to the FCC, spectrum is available in the secondary market to meet PTC needs.[23] While freight railroads have secured most of the spectrum needed for PTC implementation, commuter railroads have reported difficulty acquiring spectrum in the 220 MHz band, which is required to operate the data radios that communicate information between PTC components.[24] In particular, railroad officials have said that obtaining spectrum is a critical

[21]Radio frequency spectrum is the medium for wireless communications and supports a vast array of commercial and governmental services. Commercial entities use spectrum to provide a variety of wireless services, including mobile voice and data, paging, broadcast television and radio, and satellite services.

[22]Secondary market policies and rules allow spectrum permit licensees to share their spectrum resource through spectrum lease arrangements. Users negotiate their own terms for sharing spectrum and FCC tracks these secondary market transactions. For more information on spectrum markets, see *Spectrum Management: Incentives, Opportunities, and Testing Needed to Enhance Spectrum Sharing*, GAO-13-7 (Washington, D.C.: November 2013).

[23]Presentation to the National Transportation Safety Board. “Positive Train Control: Is it on Track?” FCC, February 27, 2013.

[24]Seven freight railroads (Norfolk Southern, Union Pacific, BNSF, CSX Transportation, Canadian National, Canadian Pacific, and Kansas City Southern) together comprise PTC 220 LLC, a company that owns spectrum licenses. According to a PTC 220 LLC representative, these seven freight railroads will lease spectrum from PTC 220 LLC and will lease spectrum to other railroads based on availability for a fee.

challenge in high density urban areas. Based on our preliminary work, without acquiring sufficient spectrum, railroads may be unable to adequately test their PTC systems, potentially causing further delays in meeting the 2015 PTC deadline.[25]

Our work to date also indicates that by attempting to implement PTC by the 2015 deadline, railroads may be making choices that could introduce financial and operational risks to PTC implementation. Representatives from freight railroads and FRA told us railroads will not compromise the safety functions of the PTC system and will ensure that PTC is implemented meeting RSIA requirements. However, freight railroad representatives also told us that they compressed time frames and undertook processes in parallel rather than sequentially— potentially increasing the financial and operational risk of PTC implementation. For example, railroads took a "double touch" approach to equipping locomotives, which involves taking locomotives out of service twice in order to begin installation while software was being developed.[26] Railroad representatives told us this approach is more expensive than installing the equipment once after the software is fully developed, as it involves more labor hours and more time that locomotives are offline rather than in operation. In addition, representatives from all freight railroads we spoke to expressed concern regarding the reliability of PTC and noted the importance of field testing as much as necessary to identify and correct problems. These representatives noted that without adequate testing, PTC systems could potentially malfunction or fail more frequently, causing system disruptions. FRA officials also expressed concern that if pressured to meet the 2015 deadline, railroads may rush through field testing and potentially implement a PTC system that is not entirely reliable leading to operational inefficiencies through slower trains or congestion.

In its August 2012 report to Congress, FRA identified areas for consideration in the event that Congress chooses to amend RSIA. Specifically, FRA requested the authority to extend the deadline for

[25]Amtrak officials also report that securing spectrum has been a major challenge in PTC implementation for them and has led to implementation delays.

[26]"Double touch" installation refers to partially installing groundwork equipment on thousands of locomotives, which will later need to be taken out of service to install the remaining equipment.

certain rail lines, grant provisional certification of PTC systems and approve the use of alternative safety technologies in lieu of PTC.[27] FRA officials told us these authorities could enable them to conduct oversight more effectively by acknowledging the current state of PTC implementation and better manage FRA's limited resources. Although to date there are few details on how these authorities would be applied, according to FRA officials, these authorities could assist in better managing resources allowing the agency to oversee and manage PTC implementation past the current deadline of December 31, 2015.

Based on our preliminary work, it appears unlikely that PTC will be implemented by more than a few railroads by the December 31, 2015, deadline. As we have discussed, PTC implementation is a massive, complex, and expensive undertaking—with valid challenges to meeting the deadline. However, although most railroads will not meet the PTC deadline, it does not necessarily suggest that they have not made a concerted effort to make progress in the implementation of PTC. Railroads and FRA both report continuing to search for ways to speed progress while maintaining safe rail operations in order to achieve complete deployment as soon as possible. Nonetheless, given the state of PTC technology and the myriad of PTC components that are required to work seamlessly in order for PTC to work reliably, concerns regarding the potential risks railroads may be taking in attempting to meet the deadline should be considered. Accordingly, FRA has requested authorities that could provide railroads the flexibility they need to successfully implement PTC.

Chairman Blumenthal, Ranking Member Blunt, and Members of the Committee, this concludes my prepared remarks. I am happy to respond to any questions that you may have at this time.

GAO Contact and Staff Acknowledgments

For further information regarding this testimony, please contact Susan Fleming at (202) 512-2834 or flemings@gao.gov. Contact points for our Office of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals who made key contributions to this statement include Susan Zimmerman (Assistant Director), Melissa

[27]According to FRA, this would allow a railroad to apply for provisional certification to operate a PTC system pending final submission, review, and approval of the railroad's safety plan by FRA.

Bodeau, Richard Bulman, Aisha Cabrer, Robert Ciszewski, Tim Guinane, Greg Hanna, Emily Larson, Sara Ann Moessbauer, Faye Morrison, Josh Ormond, Sharon Silas, and Crystal Wesco.

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