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

Bill Shuster
Chairman

Christopher P. Bertram, Staff Director

Peter A. DeFazio
Ranking Member

Katherine W. Dedrick, Democratic Staff Director

June 19, 2015

SUMMARY OF SUBJECT MATTER

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

PURPOSE

The Subcommittee on Railroads, Pipelines, and Hazardous Materials is scheduled to meet on Wednesday, June 24, 2015, 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 by the December 31, 2015, deadline.

BACKGROUND

The Rail Safety Improvement Act (RSIA), Pub. L. 110-432, Division A, included a number of provisions meant to improve safety of freight and passenger rail operations for the benefit of rail passengers, railroad employees, and communities. One of the major safety features of RSIA was the requirement that certain freight, commuter, and passenger rail lines install PTC by December 31, 2015.

The PTC mandate was in response to 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, California. 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 amends title 49 of the United States Code to add a new section 20157, Implementation of positive train control systems. This section mandates 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 are transported; and (3) such other tracks as the Secretary may prescribe by regulation or order.

The Association of American Railroads (AAR), the American Public Transportation Association (APTA), and the Federal Railroad Administration (FRA) have reported that most railroads will not have PTC fully implemented by the deadline. While freight railroads have made strides toward implementing PTC, it will not be fully operational on the entire network by the December 2015 deadline. In general, commuter railroads must wait until freight railroads and Amtrak equip the rail lines they operate on, and most commuter railroads do not expect to meet the 2015 deadline.

Elements of Positive Train Control

"Positive train control" describes technologies designed to automatically stop or slow a train before certain accidents caused by human error 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.

To install PTC, there are two primary types of systems—overlay and standalone— that functionally meet the PTC requirements in RSIA. 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. Almost all railroads required to install PTC are installing overlay systems because it makes it more feasible to meet the PTC implementation deadline than installing a standalone system.

Of the various PTC overlay systems that have been developed, all seven major freight railroads in the United States plan to implement Interoperable Electronic Train Management System (I-ETMS), which will account for most of the approximately 60,000 miles of track. Amtrak is implementing Advanced Civil Speed Enforcement System (ACSES) on the Northeast Corridor. Although ACSES and I-ETMS are functionally similar, they differ technologically. To determine train location, ACSES relies on track-embedded transponders, while I-ETMS uses Global Positioning System (GPS) information. Since most commuter railroads run over tracks owned by freight railroads or Amtrak, they are largely implementing the same systems developed by the freight railroads or Amtrak. For example, eight commuter rail systems that

operate over Amtrak infrastructure on the Northeast Corridor—including major commuter systems in the New York City, Philadelphia, and Boston areas—are installing ACSES.[1]

To implement PTC that meets the requirements of the RSIA, railroads are developing more than 20 major components that are currently in various stages of development, integrating them, and installing them across the rail network. AAR recently reported that as of April 2015, railroads had spent $5 billion on PTC implementation, yet significant challenges still remained.[2] Similarly, APTA reported that, as of May 2015, commuter railroads had spent nearly $1 billion on PTC implementation of the estimated $3.48 billion in total cost for commuters. Even with these levels of spending, a lot of work remains to be done.

PTC Mandate Impact on Freight Railroads

AAR issued a report in April 2015 updating Congress and interested stakeholders on the implementation of PTC by freight railroads. In terms of installation, AAR reported that about half of wayside interface units, which are needed to communicate data, had been installed; 50 percent of locomotives needing upgrades had been fully equipped; and just over half the signals needing replacement had been completed.

Unfortunately, over the last several years, the freight railroads have been working through a backlog of submissions to the Federal Communications Commission (FCC) for review of wayside antennas under the historic preservation laws. The FCC had placed a year-long moratorium on all new wayside antenna reviews, because its process for review was not able to handle the over 22,000 antennas needed to implement PTC. While FCC has established a new procedure for the reviews, it still takes approximately two months per submission for the FCC to complete each review.

In addition to resolving the FCC process, AAR reports that accomplishments over the last year or so include:

- Submittal of a revised PTC Development Plan to include FRA required enhancements to the I-ETMS system;
- Development of PTC Safety Plans which must be submitted to FRA prior to FRA certifying the PTC systems;
- Approval from FRA in April to utilize shared brake testing results and the resources of TTCI to further validate the I-ETMS brake algorithm in lieu of extended live field brake test of "worst case" conditions;
- Field qualification testing of PTC on Class I railroads; and
- Establishment of AAR's committee on PTC standards.[3]

[1] U.S. Gov't Accountability Office, GAO-13-720, Positive Train Control: Additional Authorities Could Benefit Implementation (2013).
[2] Assoc. Am. RRs, PTC Implementation: The Railroad Industry Cannot Install PTC on the Entire Nationwide Network by the 2015 Deadline 13 (Apr. 2015).
[3] Id. at 1-2.

While progress has been made, significant challenges remain, including:

- Wayside implementation continues to be constrained by the limited number of firms that provide signal design services and the scope of the redesign task;
- Signal systems must be redesigned and replaced at approximately 6,400 locations before PTC wayside can be installed at locations;
- Wayside design and installations will extend into 2018;
- The track database must be validated mile-by-mile (the display the crew sees via onboard systems reflects what is shown by railroad signals);
- Limited expertise available to accelerate design and development;
- I-ETMS Back Office Server (BOS) software will not be released until late 2015;
- 60 percent of Class I employees must receive PTC training; and
- PTC must be implemented in phases, starting with less complex areas and proceeding to more complex areas.[4]

AAR concludes that an interoperable PTC system will not be implemented by the December 31, 2015, deadline.[5] It is not clear how this deadline will be enforced by FRA, nor is it clear how this will affect the freight railroads' duty to carry TIH/PIH materials under their common-carrier obligation.

PTC Mandate Impact on Commuter Railroads

There are currently 23 commuter railroads operating in the United States. Commuter railroads have serious concerns about the underlying mandate itself, particularly given that they are public agencies managed at the local level by transit agencies and receive federal capital grant funds through the Federal Transit Administration (FTA). The FTA formula grant funds are required for ongoing system maintenance and modernization, and the estimated $3.48 billion[6] price tag for implementation of PTC on commuter rail systems is not within reach for commuter rail agencies. In fact, most transit agencies in the United States have had to cut service or increase fares to make up for declining local and state support over the last two years. Commuter railroads argue that the PTC mandate could have the unintended consequence of degrading system safety by requiring the deferral of needed state of good repair projects in order to fund initial phases of PTC.

Commuter railroads are also concerned about the issues of interoperability and spectrum allocation. Because commuter railroads often run over tracks owned by a Class I freight railroad, their PTC systems must be interoperable with the system installed by the freight railroad. Some commuters operate on both freight and Amtrak lines, therefore, requiring that they equip their locomotives and other primary movers with both I-ETMS and ACSES compatible systems.[7] Additionally, 220 MHz radio spectrum is necessary to allow the wireless communications between train locomotives, wayside equipment, dispatch centers, and communications

[4] Id. at 2-3.
[5] Id. at 13.
[6] Am. Public Transp. Ass'n, Positive Train Control: An Assessment of PTC Implementation by Commuter Railroads 4 (Apr. 2015).
[7] Id. at 8.

subsystems that make up a PTC network.[8] The freight railroads have been successful in securing enough spectrum bandwidth for the freight PTC installation, but commuter rail systems operate in and near cities, where there is already strong demand for radio spectrum. The commuter railroads are concerned that there will not be sufficient spectrum for effective PTC implementation. Furthermore, APTA members report that 4,900 locomotives and passenger cars with control cabs would need to be equipped with PTC technology.[9] APTA states that there are 8,300 miles of lines that need to be equipped and only 40 percent of that mileage will be completed by the end of 2015.[10] Indeed, full implementation by APTA members is not projected to be completed until 2020.[11]

[8] Id. at 4,8.
[9] Id. at 6
[10] Id. at 10.
[11] Id.

WITNESS LIST

Ms. Sarah Feinberg
Acting Administrator
Federal Railroad Administration

Mr. Charles Mathias
Associate Bureau Chief
Wireless Telecommunications Bureau
U.S. Federal Communications Commission

Mr. Frank Lonegro
Vice President - Service Design
CSX Transportation

Mr. Donald Orseno
Executive Director/Chief Executive Officer
Metra Commuter Railroad

Mr. Russell Kerwin
Deputy Project Manager, Positive Train Control
Metrolink/AECOM