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Before the  
Committee on Transportation and Infrastructure,  
Subcommittee on Railroads, Pipelines, and Hazardous Materials  
United States House of Representatives

***“Oversight of Positive Train Control Implementation in the United States”***

February 15, 2018

Chairman Denham, Ranking Member Capuano, and Members of the Subcommittee:

Thank you for inviting me to discuss the Federal Railroad Administration’s (FRA) oversight of positive train control (PTC) implementation in the United States. In light of the recent tragic passenger rail incidents, much of the nation’s time and attention has been rightly focused on ensuring that all critical safety measures are in place within our nation’s rail system. Safety is the FRA’s top priority. Our mission at the FRA is to enable the safe, reliable, and efficient movement of people and goods for a strong America, now and in the future. The men and women of FRA execute this important mission every day. Under the leadership of Secretary Elaine L. Chao, FRA executes this objective through developing and enforcing safety regulations, promoting non-regulatory safety activities, investing in rail services and infrastructure, facilitating national and regional rail planning, and conducting research and development to advance innovative technology solutions.

PTC will represent the most fundamental change in rail safety technologies since the introduction of Automatic Train Control in the 1920s. PTC is a processor-based/communication-based train control system designed to prevent certain train accidents. This technology is capable of automatically controlling train speeds and movements should a train operator fail to take appropriate action for the conditions at hand. For example, PTC can force a train to a stop before it passes a signal displaying a stop indicator, or before diverging on an improperly aligned switch, thereby averting a potential collision.

Currently, 41 railroads are required to implement a PTC system, including 7 Class I freight railroads, 30 commuter and intercity passenger railroads including (Amtrak), and 4 short line and

terminal railroads.<sup>1</sup> These systems are being implemented on approximately 60,000 miles of the 140,000-mile railroad network.

## **I. Positive Train Control Systems**

As first mandated by the Rail Safety Improvement Act of 2008, each Class I railroad and each entity providing regularly scheduled, intercity or commuter rail passenger service must implement an FRA-certified PTC system on:

- its main line over which 5 million or more gross tons of annual traffic and poison- or toxic-by-inhalation hazardous materials are transported, and
- its main line over which intercity or commuter rail service is regularly provided.

Per Federal statute and regulations, PTC systems must be designed to prevent train-to-train collisions, over-speed derailments, incursions into established work zone limits, and the movement of a train through a main line switch in the improper position. Railroads are primarily implementing the following PTC systems in the United States: (1) the Interoperable Electronic Train Management System (I-ETMS), which is the predominant system being implemented by Class I railroads; (2) the Advanced Civil Speed Enforcement System (ACSES II), which is being implemented by most railroads operating on the Northeast Corridor; and (3) Enhanced Automatic Train Control (E-ATC), which is being implemented by six intercity passenger or commuter railroads. Each of these PTC systems must be interoperable, meaning the locomotives of any host railroad and tenant railroad operating on the same main line will communicate with and respond to the PTC system, including uninterrupted movements over property boundaries.<sup>2</sup>

## **II. Safety Benefits of PTC Technology**

The improvement in safety provided by PTC technology comes with significant costs, both in terms of immediate acquisition (industry expenditures will exceed \$14 billion for PTC system implementation)<sup>3</sup> and increased operations and maintenance costs (estimated at approximately 15-20% of capital costs per year).

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<sup>1</sup> For purposes of this total, please note that in instances where a host freight railroad is implementing a PTC system solely because of one or more tenant railroads that provide commuter rail transportation on the host railroad's main line, FRA counts that as one railroad.

<sup>2</sup> See Title 49 United States Code (U.S.C.) § 20157(a)(2)(A)(i)(I), (a)(2)(D), (i)(3); Title 49 Code of Federal Regulations (CFR) §§ 236.1003, 236.1011(a)(3).

<sup>3</sup> See Association of American Railroads, *Positive Train Control*, at 2 (March 2017), <https://www.aar.org/BackgroundPapers/Positive%20Train%20Control.pdf>.

### III. Legislative History

#### A. Rail Safety Improvement Act of 2008

On October 16, 2008, the Rail Safety Improvement Act of 2008 (RSIA) was enacted, establishing the PTC system implementation mandate and the original December 31, 2015 deadline.<sup>4</sup> As directed by RSIA, FRA issued regulations specifying the essential technical functionalities of PTC systems and FRA PTC certification criteria.<sup>5</sup>

#### B. Positive Train Control Enforcement and Implementation Act of 2015

Approximately two months before the original PTC implementation deadline of December 31, 2015, the House and Senate overwhelmingly passed the Positive Train Control Enforcement and Implementation Act of 2015 (PTCEI Act). The legislation was signed into law on October 29, 2015.<sup>6</sup> The PTCEI Act extended the deadline for full implementation of PTC systems from December 31, 2015, to at least December 31, 2018.

The PTCEI Act *requires* FRA to grant a railroad a deadline extension to a date no later than December 31, 2020, if a railroad submits a written request for an extension that demonstrates it has met the statutory criteria<sup>7</sup> under 49 U.S.C. § 20157(a)(3)(B):

- **Hardware** – Installed, by December 31, 2018, *all* PTC system hardware required for system implementation consistent with railroad’s PTC Implementation Plan (PTCIP);
- **Spectrum** – Acquired, by December 31, 2018, all spectrum necessary for implementation of the railroad’s PTC system;
- **Employee Training** – Completed the employee training required under 49 CFR part 236, subpart I for all applicable personnel in any territory, or segment thereof, where the PTC system is currently being operated in revenue service demonstration (RSD) or revenue service;
- **Advanced Testing and/or Implementation:**
  - For Class I railroads and Amtrak, the railroad has implemented a PTC system or initiated FRA-approved RSD on the majority of territories (e.g., subdivisions or districts) or route miles the railroad owns or controls that are required to have operations governed by a PTC system;

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<sup>4</sup> Pub. L. No. 110-432, § 104(a), 122 Stat. 4848 (Oct. 16, 2008).

<sup>5</sup> See 49 CFR part 236, subpart I.

<sup>6</sup> Pub. L. No. 114-73, 129 Stat. 568, 576–82 (Oct. 29, 2015), *amending* 49 U.S.C. § 20157.

<sup>7</sup> See 49 U.S.C. § 20157(a)(3)(A)–(D); 49 CFR § 1.89.

- For other railroads (i.e., not Class I railroads or Amtrak), the railroad has initiated FRA-approved RSD on at least one territory that is required to have operations governed by a PTC system, or met any other criteria established by FRA;
- Included in its PTCIP an alternative schedule and sequence for implementing a PTC system as soon as practicable, but no later than December 31, 2020; and
- Certified to FRA in writing that it will be in full compliance with 49 U.S.C. § 20157 on or before the deadline in its proposed alternative schedule and sequence.<sup>8</sup>

Among other requirements, the PTCEI Act also required each railroad subject to the statutory mandate to submit a Revised PTCIP to FRA by January 27, 2016, and mandated that FRA conduct reviews, at least annually, to ensure that each railroad is complying with its PTCIP, including any FRA-approved amendments.<sup>9</sup>

### **C. Fixing America’s Surface Transportation Act**

Following enactment of the PTCEI Act, FRA encouraged railroads to fully implement PTC systems by December 31, 2018, despite the statutory provision that allows an extension up to 24 additional months. However, the Fixing America’s Surface Transportation (FAST) Act subsequently enacted on December 4, 2015, explicitly prohibits FRA from requiring a railroad to submit a PTCIP with a December 31, 2018, deadline for full PTC system implementation.<sup>10</sup> As such, the FAST Act authorizes a railroad to submit a plan for implementation with the only deadline being December 31, 2020. If a railroad meets all statutory criteria required for a deadline extension, the PTCEI Act requires the Department to approve a railroad’s request for an extension to complete full PTC system implementation as soon as practicable but no later than December 31, 2020. The FAST Act also removed FRA’s authority to approve or disapprove the PTCIPs submitted to FRA in January 2016 pursuant to the PTCEI Act.<sup>11</sup>

## **IV. Enforcement of the PTC Implementation Mandate**

### **A. Future PTC Enforcement Actions**

FRA is authorized to assess monetary civil penalties against any railroad that fails to implement a PTC system by the applicable statutory deadline.<sup>12</sup> FRA may not assess a civil penalty against a railroad that fails to implement a PTC system by December 31, 2018, but

<sup>8</sup> 49 U.S.C. § 20157(a)(3)(B)(i)–(vii); 49 CFR § 1.89.

<sup>9</sup> 49 U.S.C. § (a)(1)–(2), (c)(2).

<sup>10</sup> Pub. L. No. 114-94, § 11315(d), 129 Stat. 1312, 1675 (Dec. 4, 2015), *amending* 49 U.S.C. § 20157(g).

<sup>11</sup> *See* 49 U.S.C. § 20157(g)(4)(A)(i)–(ii).

<sup>12</sup> 49 U.S.C. § 20157(e); 49 CFR §§ 1.89, 236.1005(b)(7).

obtains an extension to the December 31, 2018 deadline to a date no later than December 31, 2020.<sup>13</sup>

In general, FRA's civil penalty schedule recommends, as guidance, a \$16,000 civil penalty for a railroad's failure to timely complete PTC system implementation on a track segment where a PTC system is required.<sup>14</sup> For any violation of a Federal rail safety statute, regulation, or order under FRA's authority, however, the statutory minimum civil penalty FRA may assess is \$853, and the ordinary statutory maximum civil penalty is \$27,904.<sup>15</sup> FRA may assess a civil penalty for each day the non-compliance 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 non-compliance continues.<sup>16</sup>

With respect to future enforcement action, FRA is currently considering all options, within the framework established by Congress, and will determine what type of enforcement action will be most effective and appropriate under the circumstances, in order to ensure such action compels a railroad to fully implement its PTC system as efficiently and safely as possible.

#### **B. Past PTC Enforcement Actions**

As mandated by the PTCEI Act, beginning calendar year 2016, FRA must conduct compliance reviews at least annually to verify whether each railroad is complying with its PTCIP.<sup>17</sup> FRA is authorized to assess civil penalties against any railroad that fails to complete the end-of-year implementation milestones the railroad established in its PTCIP, including the railroad's end-of-2016 and end-of-2017 milestones for PTC hardware installation, spectrum acquisition, and employee training.<sup>18</sup>

#### ***Twelve Closed Cases and Two Open Cases***

For the first time since the RSIA, in June and July 2017, FRA issued Notices of Probable Violation against (i) seven railroads that failed to complete hardware installation milestones they scheduled to complete during calendar year 2016 in their PTCIP<sup>19</sup> and (ii) seven railroads that failed to submit a timely Annual PTC Progress Report (Form FRA F 6180.166, OMB Control

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<sup>13</sup> See 49 U.S.C. § 20157(a)(3)(A)–(D) (describing the extension request process and the revised deadlines).

<sup>14</sup> See 49 CFR part 236, appendix A, subpart I.

<sup>15</sup> See 82 Fed. Reg. 16127 (Apr. 3, 2017).

<sup>16</sup> See 49 U.S.C. § 21301(a).

<sup>17</sup> 49 U.S.C. § 20157(c)(2).

<sup>18</sup> 49 U.S.C. § 20157(a)(2)(D), (e)(2).

<sup>19</sup> See 49 U.S.C. § 20157(a)(2)(D), (e)(2).

No. 2130-0553) to FRA by the statutory March 31, 2017, deadline.<sup>20</sup> Twelve railroads have paid or, at a minimum, agreed to pay the civil penalty amount and the other two cases are still being negotiated with the railroads.

## **V. FRA Efforts to Urge Timely Implementation of PTC Systems**

### **A. Outreach**

During calendar year 2017, FRA continued to take action to ensure that railroads implement PTC systems in a timely and safe manner. For example, FRA sent letters of concern to railroads and certain state officials regarding certain railroads' failure to complete end-of-2016 hardware installation milestones<sup>21</sup> and railroads that had installed less than 50 percent of all hardware required for their PTC systems as of December 31, 2016.<sup>22</sup> FRA sent letters to the state departments of transportation (DOT) of Illinois, Indiana, Maryland, New Jersey, Tennessee, and Texas and the state DOTs and state governors of California, Florida, Indiana, Maryland, Massachusetts, New Jersey, New Mexico, New York, Tennessee, and Texas.

On December 27, 2017, ahead of the one-year deadline for PTC implementation, Secretary Chao issued a letter, to all Class I railroads, intercity passenger railroads, and commuter railroads, stressing the urgency and importance of safely implementing PTC systems in the upcoming year and meeting the statutory deadline. Since December 2017, FRA leadership met with the executive leadership and technical teams of each railroad subject to the statutory mandate to help ensure PTC systems are being implemented as efficiently as possible, discuss any challenges the railroads continue to experience, and the railroads' plans for compliance with the statutory mandate.

In addition, FRA continues to provide technical assistance throughout all phases of PTC development and implementation by providing lessons learned guidance and other technical

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<sup>20</sup> See 49 U.S.C. § 20157(c)(1), (e)(1); 49 CFR § 236.1009(a)(5).

<sup>21</sup> The recipients of letters about missed end-of-2016 milestone were: Amtrak; Belt Railway Company of Chicago; BNSF Railway; Canadian National Railway; Canadian Pacific Railway; Capital Metropolitan Transportation Authority; CSX Transportation, Inc.; Kansas City Southern Railway; Maryland Area Regional Commuter; Nashville Regional Transportation Authority / Nashville and Eastern Railroad; New Jersey Transit; Norfolk Southern Railway; Northeast Illinois Regional Commuter Railroad (Metra); Northern Indiana Commuter Transportation District; Terminal Railroad Association of St. Louis; and Union Pacific Railroad.

<sup>22</sup> The recipients of letters about lack of hardware installation progress were: Altamont Corridor Express; Belt Railway Company of Chicago; Canadian National Railway; Capital Metropolitan Transportation Authority; Central Florida Rail Corridor; Denton County Transportation Authority; Long Island Rail Road; Maryland Area Regional Commuter; Massachusetts Bay Transportation Authority; Metro-North Commuter Railroad; Nashville Regional Transportation Authority / Nashville and Eastern Railroad; New Jersey Transit; New Mexico Rail Runner Express; Northern Indiana Commuter Transportation District; South Florida Regional Transportation Authority; Trinity Railway Express; and Terminal Railroad Association of St. Louis.

assistance through quarterly meetings with high-risk commuter railroads to help address their issues with implementing PTC systems. FRA participates, in and provides technical support to, several industry working groups, including the Association of American Railroad's ACSES II Working Group, the American Public Transportation Association's (APTA) I-ETMS Working Group for commuter railroads, and the railroad-led E-ATC Working Group.

In support of PTC Research and Development (R&D), FRA has provided technical support for railroads' development of their PTC systems, including I-ETMS, ACSES II, E-ATC, and the Incremental Train Control System. In addition, in cooperation with individual railroads, as well as APTA, AAR, and the American Short Line and Regional Railroad Association committees, FRA is supporting, through a combination of funding and technical support, approximately 10 PTC-related research projects.

### **B. Grant Funding and Financial Assistance**

Since 2009, FRA awarded approximately \$728 million in grant funding to support railroads' implementation of PTC systems. FRA staff also supported the Federal Transit Administration with its evaluation and selection of approximately \$197 million in PTC grant funds to 17 commuter and intercity passenger railroads and state and local governments for installation of PTC systems, which were announced on May 31, 2017. The sources of the approximately \$925 million in grant funding are:

- \$475 million from FRA's High-Speed Intercity Passenger Rail Grant Program;
- \$86 million from FRA's Railroad Safety Technology Grant Program;
- \$51 million in American Recovery and Reinvestment Act grant funding to Amtrak;
- \$116 million in annual capital grant funding to Amtrak (as of November 2017); and
- \$197 million in FAST Act funding.

PTC implementation is also an eligible project cost under both the Transportation and Infrastructure Finance and Innovation Act (TIFIA) and the Railroad Rehabilitation and Improvement Financing (RRIF) loan programs. The Department's Build America Bureau signed two loans, \$162 million TIFIA and \$220 million RRIF, with the Massachusetts Bay Transportation Authority on December 8, 2017, which provide \$382 million for PTC system implementation. In May 2015, the Department issued a \$967 million RRIF loan to the Metropolitan Transportation Authority for the implementation of PTC systems on the Metro-North Commuter Railroad and Long Island Rail Road.

Approximately \$31 billion is currently available for lending under the RRIF program. Lending authority under the TIFIA program is approximately \$22 billion; however, this figure is subject to available subsidy budget authority and the levels of risk associated with future loans. In considering the loans for PTC-related projects, a total amount of \$1.349 billion has been obligated since 2011.

### **C. PTC Staffing and Personnel**

FRA staffing to support railroads' implementation of PTC systems consists of both full-time civil service government positions and contractor support. Dedicated civil service positions total 15, including a staff director, PTC specialists, a project manager, a senior scientific technical advisor, an engineer, a transportation analyst, and a trial attorney. In addition, there are 6 civil service positions providing part-time support to address specific issues. Two PTC positions are currently open; recruitment is in process, but the unique expertise and skills needed are difficult to find.

FRA understands that throughout 2018, there will be an increase in railroads' requests for FRA approval of Requests for Amendments to PTCIPs, to conduct PTC field testing and conduct revenue service demonstration, and thereafter more railroads will submit PTC Safety Plans to FRA for review and approval, in order to obtain PTC System Certification. To address these needs in a manner that supports accelerated implementation timelines, FRA has increased its PTC workforce through hiring and training, and initiated two contracts to provide additional technical assistance.

## **VI. Railroads' Progress Towards Meeting Statutory Deadline**

FRA interprets "full implementation" to mean that an FRA-certified,<sup>23</sup> interoperable PTC system—including all hardware, software, and other components—has been fully installed and is in operation on all route miles required to have operations governed by a PTC system under 49 U.S.C. § 20157.<sup>24</sup> Full implementation requires that all controlling locomotives shall be equipped with a fully operative and functioning onboard PTC apparatus, including the

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<sup>23</sup> To date, based on these railroads' PTC Safety Plans, FRA has issued conditional PTC System Certification for the I-ETMS systems of BNSF Railway, Canadian Pacific Railway, CSX Transportation, Inc., Norfolk Southern Railway, Southern California Regional Rail Authority (Metrolink), and Union Pacific Railroad, and for Amtrak's and the Southeastern Pennsylvania Transportation Authority's ACSES II systems.

<sup>24</sup> The PTCEI Act recognizes that certain PTC system failures (e.g. initialization failures, cut outs, and malfunctions) will occur during the period specified in the statute, but a railroad must both operate at an equivalent or greater level of safety than the level of safety achieved immediately prior to the use or implementation of the PTC system and comply with certain safety measures during any PTC system failures. *See* 49 U.S.C. § 20157(j).

controlling locomotives of each railroad subject to the statutory mandate and each tenant railroad operating on a PTC-equipped track segment, except for a railroad's controlling locomotives that qualify for an exception under 49 CFR § 236.1006. The statutory mandate and FRA's implementing regulations also require a PTC system to be interoperable, meaning the locomotives of any host railroad and tenant railroad operating on the same main line will communicate with and respond to the PTC system, including uninterrupted movements over property boundaries.<sup>25</sup>

Under this definition of "full implementation," FRA anticipates that few, if any, of the 41 railroads currently subject to the statutory mandate will have fully implemented a PTC system by December 31, 2018. Some railroads, most notably BNSF Railway, Union Pacific Railroad, Southeastern Pennsylvania Transportation Authority, and the Southern California Regional Rail Authority (Metrolink), will have an FRA-certified PTC system in operation on their own locomotives on all route miles required under 49 U.S.C. § 20157, on or before December 31, 2018. However, it is unlikely that all controlling locomotives of tenant railroads operating on these PTC-equipped railroad properties will be capable of operating with the host railroad's PTC system by that date.

## **VII. Challenges**

During FRA's meetings with the leadership of the 41 railroads subject to the statutory mandate, railroads commonly conveyed the following ongoing challenges:

- There is a limited number of PTC system vendors and suppliers, all of which are significantly resource-constrained and serving 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 noted that many tenant railroads 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;
- Railroads have only recently begun testing PTC systems for interoperability;

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<sup>25</sup> See 49 U.S.C. § 20157(a)(2)(A)(i)(I), (a)(2)(D), (i)(3); 49 CFR §§ 236.1003, 236.1011(a)(3).

- Many commuter railroads stated that negotiating legal agreements with certain vendors and suppliers often took multiple years to complete, given various insurance, liability, and State law issues; and
- Railroads noted concern about FRA's approval review and approval cycle, given the surge in submissions requiring FRA approval in 2018.

#### **VIII. Conclusion**

PTC implementation is a top priority of the Department and FRA. Railroads' successful implementation of PTC systems is an important safety initiative for FRA. It is also an important innovation for the future of rail transportation. Given the complexity of these systems, it is imperative that railroads, suppliers, and governing bodies prioritize and focus their attention on meeting this year's Congressional deadline. Over the last ten weeks, FRA leadership and PTC technical staff have conferred with all 41 PTC railroads individually, with the vast majority of these meetings occurring in-person here in Washington. FRA has engaged in candid dialogue with these railroads for several years, but the recent meetings have allowed each railroad's leadership to share PTC lessons learned, obstacles overcome and still remaining, and plans to either comply with the mandate or qualify for an extension by December 31, 2018. Many of the railroads have expressed optimism about meeting this year's deadline. Yet, FRA acknowledges that challenges remain for railroads and their suppliers.

FRA believes that the railroads are prioritizing PTC implementation and that, with limited exceptions, a majority of the 41 railroads subject to the mandate will be able to comply with the statutory requirements for an extension by the end of this calendar year.

I appreciate the committee's interest in our Nation's infrastructure and, particularly, your assistance to the FRA in ensuring railroads implement this rail-safety technology in a timely manner in accordance with the laws and extensions enacted by Congress.

Thank you, Mr. Chairman, for the opportunity to testify. I am happy to answer any questions.