

**Federal Railroad Administration
Status Report to
House and Senate Committees on Appropriations**



Status of Positive Train Control Implementation

August 2015

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1. Introduction

DOT and FRA are providing this Status Report to the House and Senate Appropriations Committees pursuant to the House Appropriations Transportation, Housing and Urban Development, and Related Agencies Subcommittee Report 113–464 accompanying the FY 2015 Consolidated and Further Continuing Appropriations Act, and in compliance with section 104 of the Rail Safety Improvement Act of 2008 (RSIA) (Pub. L. No. 110-432, Division A, codified in section 20157 of title 49, United States Code).

In 2008, after multiple accidents and urging from safety advocates and experts, as well as the National Transportation Safety Board (NTSB), Congress mandated that railroads implement Positive Train Control (PTC) systems by December 31, 2015. A majority of railroads will not meet this statutory deadline.

This Status Report informs Congress, railroads, other industry stakeholders, and the public of: (1) the background of the PTC mandate and other requirements; (2) efforts FRA has taken and continues to take to support railroads in implementing PTC; (3) current status of railroads progress in implementing PTC; (4) FRA’s enforcement options for railroads that fail to meet the December 31, 2015, deadline; and (5) a path forward to achieve full PTC implementation.

2. Background

History of Positive Train Control technology and calls for implementation

PTC technology is the single-most important rail safety development in more than a century.

According to the NTSB’s PTC Preventable Accident List, during the last 46 years, NTSB has investigated 145 freight, commuter and transit PTC-preventable railroad accidents. Had PTC been in place at the time of those incidents, the NTSB estimates 300 lives would have been saved and more than 6,700 injuries would have been avoided.¹

While the term “Positive Train Control” did not appear until a report by FRA in 1994, the technology is not completely new. Since the early 20th century, rudimentary elements of PTC have existed, and regulators and safety advocates have been calling on the rail industry to implement some form of PTC for decades. In Germany, Great Britain, and France, there has been one form or another of automatic train control since the 1930s.

In 1922, the Interstate Commerce Commission (ICC) used its authority under the 1920 Transportation Act to require railroads to install a train control system on at least one

¹ NTSB, PTC Preventable Accident List. June 10, 2015. http://www.nts.gov/news/speeches/T-Bella-Dinh-Zarr/Documents/20150610_PTC_Preventable_Accident_List.xls.

division over which passenger trains operated.² The Order was expanded in 1924 to include an additional passenger division on each railroad. The ICC set minimum standards that required train stop systems to operate automatically and apply brakes until the train was brought to a stop if an engineer failed to acknowledge a restricting signal. A train control system was required to apply the brakes until the train was brought to a stop in the event an engineer failed to take action to control the speed of the train in accordance with signal indications. The railroads petitioned the ICC for approval to install the automatic cab signal system (ACS), which provides warning when signal aspects change to more restrictive aspects, on their line in lieu of a train stop or train control system. In 1930, the ICC approved the cab signal system.³

In 1969, the NTSB issued its first official recommendation on the need for train control technology like PTC after four people were killed and 43 were injured near Darien, Connecticut, when an engineer failed to stop at a red signal and two Penn Central Commuter trains collided head-on.⁴ In the early 1980s there was a serious and active exploration of implementing PTC by the railroads. In 1984, the Association of American Railroads (AAR) and the Railway Association of Canada published a report that outlined the core functions that a PTC-like system would be required to perform. During that same decade, BNSF partnered with Rockwell International to develop a system called Advanced Railroad Electronics System (ARES). ARES depended on using wayside equipment and radios like the Advanced Train Control System (ATCS) that was being developed at the same time. However, ARES would rely on Global Positioning System (GPS) to determine train locations. Both systems were eventually abandoned.

In 1990, after years of recommending railroads adopt PTC, the NTSB included PTC on its Most Wanted List – listing Positive Train Control as one of the top 10 most important safety needs for the country. In the 1990s, Amtrak started to deploy Advanced Civil Speed Enforcement System (ACSES) on its Northeast Corridor property. By the close of the 1990s, CSX Transportation, Inc. had started to develop a PTC system that added a GPS to provide the exact location of trains.

Today

Today, Positive Train Control is statutorily defined as “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.” 49 U.S.C. 20157(i)(3).

Today’s PTC systems use digital radio communications, global positioning, and fixed wayside signal systems to send and receive a continuous stream of data about the location,

² A division is an organizational unit (including line of road and yard operation) of a railroad based on common elements such as labor contracts, operating and safety rules, traffic, topography and geography. The intent is to centralize management of the railroad. The railroads have regions, divisions, and crew districts—each one more specific than the previous.

³ Federal Railroad Administration. Railroad Communications and Train Control Report to Congress. July 8, 1994.

⁴ National Transportation Safety Board. August 4, 2015.

http://www.nts.gov/safety/mwl/Pages/mwl8_2014.aspx

direction, and speed of trains. Such systems process this information in real time to aid dispatchers and train crews in safely and efficiently managing train movements through automatic application of train brakes whenever a train crew, for whatever reason, fails to properly operate within specified safety parameters.

There has been some successful, but limited, deployment of PTC systems in the United States. Amtrak has deployed the Incremental Train Control System (ITCS) on approximately 60 route miles between Chicago and Detroit. BNSF Railway Company (BNSF) has deployed the Electronic Train Management System (ETMS) on a limited number of pilot territories for revenue test and demonstration purposes. The most successful and widely deployed PTC system is the Amtrak Advanced Civil Speed Enforcement System (ACSES) currently along certain portions of Amtrak's Northeast Corridor.

When fully implemented, FRA expects PTC technology to have a positive, transformative, and life-saving impact on rail safety and operating efficiency in the decades to come. By automatically enforcing compliance with speed restrictions and other directives, the installation and operation of PTC systems on critical portions of the Nation's rail transportation network will positively affect the industry's already efficient capacity to safely and reliably carry freight and passengers. In the years and decades to come, PTC can help railroads satisfy projected increases in demand for freight and passenger transportation safely and efficiently.

3. PTC Mandate in the Rail Safety Improvement Act of 2008

Many cite the 2008 Metrolink⁵ accident in Chatsworth, California, as the event that propelled Congress to pass a mandate for PTC, but in addition to the increasing calls for implementation of the technology over the last 40 years, momentum had been building following a string of deadly incidents. A total of 15 freight and 10 passenger accidents over the seven-year period between 2001 and 2008 resulted in more than 34 deaths and 600 injuries. All of the accidents were PTC preventable.⁶

Three of those accidents—which occurred in Mississippi, Texas, and South Carolina—increased public attention on rail accidents and the need for a system that could override human error. The worst of the three accidents took place in Graniteville, South Carolina, when a Norfolk Southern train collided with a stationary Norfolk Southern train, resulting in a deadly release of chlorine killing nine people, sending 600 to the hospital, and requiring thousands of people nearby to evacuate for days.

In 2007, the House of Representatives passed legislation (H.R. 2095) requiring PTC on the track owned by the Class I railroads by December 31, 2014. While the House legislation permitted the Secretary to grant two-year extensions if he or she determined that it would

⁵ Formally The Southern California Regional Rail Authority.

⁶ National Transportation Safety Board. PTC Preventable Accident List. http://www.nts.gov/news/speeches/T-Bella-Dinh-Zarr/Documents/20150610_PTC_Preventable_Accident_List.xls.

lead to a more effective PTC system, Congress ultimately removed any authority to extend the deadline in the final legislation that is currently law. The Senate then passed legislation (S. 1889) on August 1, 2008, to require PTC in limited, certain circumstances with an implementation date of no later than December 31, 2018.

As negotiations were underway for a final rail bill, on September 12, 2008, a Metrolink commuter train collided head-on with a Union Pacific train in the Chatsworth district of Los Angeles, California, killing 25 people and injuring more than 100 others. The accident was deemed to have been PTC preventable – the engineer of the Metrolink train was texting and failed to stop for a red signal.

Just weeks after the Metrolink accident, Congress passed the Rail Safety Improvement Act of 2008 (RSIA) that established the current December 31, 2015, implementation deadline. President George W. Bush signed the legislation on October 16, 2008. For the first time in nearly three decades, the NTSB removed PTC from its Most Wanted list a year after the mandate became law.

But, in 2013, NTSB added PTC back to its revamped Most Wanted list as it became clear that railroads were not making enough progress to achieve the December 31, 2015, deadline. The NTSB noted that Positive Train Control implementation was part of “critical changes needed to reduce transportation accidents and save lives.”⁷

4. Implementing the Rail Safety Improvement Act’s PTC Mandate

FRA had been involved in establishing PTC standards for more than a decade prior to the mandate. The agency began discussions with stakeholders (including the railroad industry) in 1997, and in 2005 – three years before Congress would pass the mandate – FRA issued a final rule establishing uniform PTC standards for railroads willing to voluntarily install the technology.⁸

Under current law, RSIA requires PTC to be implemented on Class I railroad main lines – lines with 5 million or more gross tons annually – over which any poisonous or toxic by inhalation hazardous materials are transported (with limited exceptions and exclusions), approximately 70,000 freight rail miles and 8,000 passenger rail miles at the time. RSIA also mandates the technology on any railroad’s main line over which regularly scheduled intercity or commuter rail passenger service is conducted.

Per RSIA, FRA began to develop implementing guidance and regulations to govern implementation of PTC by engaging its diverse stakeholders. FRA convened its Railroad Safety Advisory Committee (RSAC) from January to April 2009 and tasked the Council with providing FRA with advice regarding development of implementing PTC Systems. (RSAC

⁷ The National Transportation Safety Board. 2013 Most Wanted List. <http://www.nts.gov/safety/mwl/Documents/ptc.pdf>.

⁸ 70 Fed. Reg. 11095 (Mar. 7, 2005).

is made up of representatives from the railroad industry, labor, safety groups, and other parties potentially affected by FRA safety regulations.) Based on information gathered from this effort, FRA issued a Notice of Proposed Rulemaking (NPRM) in July 2009.

FRA issued the final rule governing PTC implementation on January 15, 2010, after consideration of public comments and further analysis of data available to the agency. The rule included the core functions required of a PTC system, and outlined the requirement for railroads to submit three plans for implementation of the technology – implementation, development and safety.

The rule required each railroad to develop a PTC Implementation Plan (PTCIP) that would document the activities needed to comply with the PTC mandate and the schedule to which the railroad would adhere to ensure complete installation on a risk-based prioritization by December 31, 2015. In addition, the final rule required each railroad to submit a development plan outlining how the system would be built and a safety plan that detailed how the railroad's PTC system would function once installed and operational. The rule included a range of civil penalties that FRA could impose if a railroad failed to meet the statutory deadline. In short, the final rule provided the railroad industry a solid baseline of the requirements that would have to be met in order to obtain system certification and satisfy its statutory safety obligation.

After the final rule was issued on January 15, 2010, FRA sought to clarify the criteria that railroads would be required to meet in order to avoid implementation of PTC on certain lines or track segments. FRA solicited additional comments from the railroad industry and the public before updating the rule in September 2010. For certain rail lines to be exempt, FRA established that a line or segment would need to pass two tests: the alternative route analysis test and the residual risk analysis test.⁹ The Association of American Railroads (AAR) sued FRA over these tests. As part of the settlement agreement, FRA agreed to eliminate the tests and started another rule-making process that concluded in May 2012. This rule allowed railroads to not implement PTC on rail segments that will not transport toxic-by-inhalation contents, poisonous-by-inhalation contents, or passengers as of December 31, 2015. FRA finalized the additional rule modifications that simplified the restrictions in August 2014.

Although FRA issued multiple modifications to the original, final PTC rule of January 15, 2010, these modifications did not affect the technical regulatory requirements of PTC. The changes simply reduced the scope of the deployment from approximately 70,000 miles to approximately 60,000 miles. The technical requirements were first made available to railroads nine months after the RSIA was signed into law, and finalized just seven months later. Those technical requirements have not fundamentally changed.

⁹ Under this test, the railroad must establish that current or prospective rerouting of PIH materials traffic to one or more alternative track segments is justified. If a railroad reroutes all PIH materials off of a track segment requiring PTC system implementation under the 2008 baseline, and onto a new line, PTC system implementation on the initial line may not be required if the new line would have substantially the same overall safety and security risk as the initial line, assuming PTC system implementation on both lines. If the initial track segment, despite the elimination of all PIH materials traffic, is determined to pose higher overall safety and security risks under this analysis, then a PTC system must still be installed on that initial track segment.

5. Ongoing Challenges

Railroads have stated that they have faced a number of challenges as they have worked to implement PTC, including:

- **Wireless Spectrum Availability:** Individual railroads continue to encounter difficulty in secondary market spectrum acquisitions. There are a number of different issues that affect acquisition efforts that vary depending on the particulars of the secondary market where the railroad must obtain the spectrum. In some situations, incumbent license holders are unwilling to sell or lease their license to railroads at all because the incumbent is actively using the licensed spectrum. In other situations, incumbent license holders, while willing to sell or lease their license, are proffering the spectrum under terms and conditions that the railroads believe are neither fair nor reasonable. In other situations, ownership of the spectrum, and the identity of the actual license holder who can legally proffer the spectrum for sale or lease is tied up in legal proceedings. In these situations, neither the railroads, nor the Federal Communications Commission (FCC), can complete the transactions until the court cases have been settled.
- **Limited Number of Suppliers of PTC technology:** The number of suppliers who currently manufacture PTC system components is limited. The major suppliers with proven capability to deliver the technology in use in the US include:
 - General Electric Transportation Systems (GETS), which manufactures Incremental Train Control System (I-ITCS) and Enhanced-Automatic Train Control (E-ATC);
 - Wabtec Railway Electronics Systems (WRE), which manufactures I-ETMS;
 - Alstom Signaling Solutions, which manufactures Advanced Civil Speed Enforcement System (ACSES); and
 - Siemens Rail Automation, which manufactures communications-based train control (CBTC).
- **Potential Radio Interference:** Different PTC technologies adopted by the railroads use different radios operating with different communications protocols in similar frequency bands. These differences can give rise to desensitization.¹⁰
- **Safety Plans:** To date, FRA has received three of 38 required PTC safety plans. For years, FRA has been in constant and consistent contact with railroads to assist on safety plans and offer guidance. This includes conducting preliminary reviews of

¹⁰ Desensitization is a form of electromagnetic interference where a radio receiver is unable to receive a weak radio signal that it might otherwise be able to receive when there is no interference. This is caused by a nearby transmitter with a strong signal on a close frequency, which overloads the receiver and makes it unable to fully receive the desired signal. There are a number of potential work-arounds to address this issue such as increased spectral separation of the radio's operating frequency, introduction of blocking filters, and use of directional antennas.

required submission documents to try and identify regulatory noncompliance as soon as possible to minimize the cost and schedule impact of changes. Additionally, to make the review of these documents as efficient as possible, in early 2015 FRA sent a letter to each railroad outlining specific items and the level of data quality FRA requires to approve safety plans. In order to provide additional guidance, the letter also identified omissions that would result in the plans being rejected and considered incomplete.

6. FRA's Actions and Financial Support to Assist Railroads to Meet Deadline

In the seven years since passage of RSIA, FRA has dedicated significant resources and worked closely with the railroad industry to ensure timely compliance with the PTC safety mandate, including taking the following steps:

- Approving all 41 railroads' PTC implementation plans on time;
- Starting in March 2010, dedicated staff to work on PTC implementation. FRA continually reevaluates personnel requirements and needs to ensure adequate resources are available to support timely implementation of PTC;
- Worked directly with the Federal Communications Commission and the Advisory Council on Historic Preservation to resolve issues related to spectrum use and improve the approval process related to PTC communication towers and ancillary equipment;
- Actively supporting deployment of PTC through the issuance of RSIA-mandated performance-based regulations in January 2010, as well as additional regulations that lightened the regulatory burden and technical assistance documents to aid railroads, manufacturers, and suppliers to achieve full PTC functionality and interoperability;
- Built a PTC system test bed at the Transportation Technology Center in Pueblo, Colorado (which is available to railroads as they work to successfully integrate and test all of the component technologies necessary to achieve implementation);
- Making loans available through the Railroad Rehabilitation and Improvement Financing (RRIF) program to applicants interested in assistance in paying for PTC implementation. (In 2015, FRA issued a nearly \$1 billion loan to the Metropolitan Transit Authority in New York for implementation of PTC on the Long Island Rail Road and Metro-North Commuter Railroad Company);
- Participating in system design reviews, test readiness reviews, lab testing, and field testing as well as conducting preliminary reviews of the required submissions in an attempt to identify regulatory noncompliance as soon as possible to minimize cost and schedule impact; and
- Providing information on specific items and the level of data quality FRA requires in order to approve safety plans and identify omissions that would result in the plan being rejected and considered incomplete.

To facilitate implementation, FRA also has established a PTC Implementation Task Force that is managing and monitoring railroads' progress to ensure that FRA has real-time information on the status of PTC implementation. This team supplements FRA staff working

on PTC implementation full time. The team monitors the status of each railroad’s PTC implementation, works with the railroad to gather data and answer questions, and tracks when the railroad will have a fully operational system.

FRA has long stated that a lack of public sector funding may result in unwanted delays in fully implementing PTC, especially on commuter railroads. FRA has requested funding for PTC development and implementation in every budget request dating back to Fiscal Year (FY) 2011. Congress has not provided a guaranteed, reliable revenue stream for implementation on commuter railroads.

Positive Train Control Funding
President’s Budget Requests vs. Congressional Enacted Levels
FY 2011 – FY 2016

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Request	\$50M	\$50M	\$74M	\$4.17B	\$825M	\$825M
Enacted	\$0	\$0	\$0	\$42M	\$0	TBD

For the last two years, as part of the Generating Renewal, Opportunity, and Work with Accelerated Mobility, Efficiency, and Rebuilding of Infrastructure and Communities throughout America Act (GROW AMERICA Act) and the agency’s annual budgets, FRA has requested \$825 million to assist commuter railroads with the implementation of PTC. Additionally, FRA has requested dedicated funds to aid with the implementation of PTC on Amtrak’s national network.

It is important to note that safety benefits, including those generated through the implementation of PTC, are a key criterion in FRA’s grant programs. To that end, FRA has provided approximately \$650 million in grant funds to support PTC. This includes nearly \$400 million in American Recovery and Reinvestment Act of 2009 grants through the High-Speed Intercity Passenger Rail program, as well as Amtrak grants and other annual appropriations.

In addition to mandating the December 31, 2015, PTC implementation deadline, the RSIA authorized a grant program to assist in the deployment of PTC and other rail safety technology. While the program was authorized at \$50 million for five years, Congress appropriated \$50 million for the program in FY 2010 only. FRA awarded these funds to 10 projects to help mitigate technical PTC deployment challenges affecting stakeholders. FRA recently added an additional \$11 million from new authority provided under the FY 2014 Consolidated Appropriations Act for a total of \$61 million in Railroad Safety Technology Grants.

Despite the lack of sufficient funding directed to commuter railroads, FRA is using the resources it has available to help railroads implement PTC. On May 6, 2015, FRA issued a \$967 million loan through the RRIF program to the New York Metropolitan Transportation Authority, the Nation’s largest commuter railroad provider, to facilitate

deployment of the technology by Metro-North Commuter Railroad Company and Long Island Rail Road.

7. Status of PTC Implementation

FRA has advised Congress that most railroads have not made sufficient progress to meet the December 2015 implementation deadline. FRA highlighted its concerns about delayed PTC implementation in its August 2012 PTC report to Congress, as well as in the GROW AMERICA Act, and in other multiple public remarks, statements, and congressional testimony.

As of June 2015, aggregate analysis of data from the railroads, along with supplementary data from AAR, indicates:

Class I railroads have:

- Completed or partially completed installations of more than 50% of locomotives that require PTC equipment;
- Deployed approximately 50% of wayside units;
- Replaced approximately 50% of signals that require replacement; and
- Completed most of the required mapping for PTC tracks.

By the end of 2015, AAR projects that:

- 39% of locomotives will be fully equipped;
- 76% of wayside interface units will be installed;
- 67% of base station radios will be installed; and
- 34% of required employees will be trained.

According to APTA, 29% of commuter railroads are targeting to complete installation of PTC equipment by the end of 2015. Full implementation of PTC for all commuter lines is projected by 2020.

FRA has received three of the 38 required PTC Safety Plans (PTCSP) that FRA must evaluate to provide system certification. It is difficult to reliably estimate a firm, network-wide PTC implementation date due to the varying rate of progress and incomplete data provided by the railroads, but it is highly likely that the industry will not be in complete compliance by December 31, 2015.

Since passage of RSIA, FRA has been in close touch with railroads regarding PTC implementation. We have collected implementation data and updates from those railroads via email conversations, in person meetings, technical assistance, and other interactions. We have also collected data more formally and via reports. Most recently, FRA has been in more frequent contact with the railroads – including recent letters from Acting Administrator Feinberg to the railroads, and from FRA Chief Safety Officer Robert Lauby to the railroads – in order to ensure we have the latest and most up to date information regarding implementation. Based upon this data and FRA’s own observations, only a small percentage

of railroads are expected to obtain system certification and complete PTC implementation by December 31, 2015.

Recently, Congress has requested specific data on the PTC implementation process as well. That specific information is included in this report.¹¹

Despite FRA's actions to inform and assist railroads in collecting this data—along with looming statutory deadline and the threat of aggressive enforcement actions (including the imposition of significant civil penalties)—some railroads have not provided complete information or stepped up efforts to comply with the end-of-the-year implementation deadline.

¹¹ This new data collection has been approved by the Office of Management and Budget (OMB No. 2130-0612).

8. Individual Railroad PTC Implementation Status¹²

Railroad/Agency Name	Docket Number (PTC Implementation Plans)	Number of Locomotives to be Equipped	Number of Locomotives Completely Equipped to Date	Locomotive: Number of Radios to be Installed	Locomotive: Number of Radios Installed to Date	Miles of Track to be Mapped	Miles of Track Mapped to Date	Spectrum Obtainment Complete	Estimated Spectrum Obtainment Date	Submitted Safety Plan	Estimated Revenue Service Demo Start Year ‡
Alaska Railroad	FRA-2010-0054	54	54	54	54	535	130	Yes	NA	No	2016
Amtrak	FRA-2010-0029	193 (NEC) 17 (ITCS) 310 (I-ETMS)	189 (NEC) 17 (ITCS) 240 (I-ETMS)	310 (NEC) 17 (ITCS) 310 (I-ETMS)	40 (NEC) 17 (ITCS) 27 (I-ETMS)	367	232	No	12/1/2015	No	2015 (Northeast Corridor) 2016-2018 (other routes)
Belt Railway *	FRA-2010-0062	*	*	*	*	*	*	*	*	No	*
BNSF Railway	FRA-2010-0056	6,000	2,389	6000	2389	22,050	19,886	Yes	NA	Yes	2015
Canadian National	FRA-2010-0057	1,546	12	1546	72	4,300	257	Yes	NA	No	2016
Canadian Pacific	FRA-2010-0058	1,000	146	1,000	75	2,211	1,515	Yes	NA	No	2015
Capital Metro	FRA-2010-0072	6	0	6	0	NA †	NA †	NA †	NA †	No	2016
Central Florida Rail Corridor	FRA-2011-0104	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	No	Information not provided yet
ConRail *	FRA-2010-0064	76	*	76	*	*	*	*	*	No	*
CSX	FRA-2010-0028	3,900	812	3,600	812	21,565	21,565	Yes	NA	No	2015
Denton County	FRA-2010-0074	11	0	11	0	21	21	No	Information not provided yet	No	2018
Kansas City Southern	FRA-2010-0059	614	0	614	0	2,227	0	Yes	NA	No	2016
Kansas City Terminal *	FRA-2010-0065	*	*	*	*	*	*	*	*	No	*

¹² While FRA is tracking other granular data, this table includes some of the significant components that are common to both hosts and tenant railroads. This data are the most useful indicators of a railroad's general PTC implementation progress, regardless of system type. FRA obtained the data presented in this chart from the Association of American Railroads, the American Public Transportation Association and individual railroads. The table was updated of July 29, 2015. As noted above, if railroads do not provide the information FRA has requested, FRA has authority to subpoena the information.

*Railroad has indicated it will provide information as part of the American Short Line and Regional Railroad Association's August report.

† Current system design uses other methods to achieve train location information.

‡ Some railroads use revenue service demo to indicate full PTC implementation while others consider it when they have finished the portions of the PTC system they are responsible to complete.

Railroad/Agency Name	Docket Number (PTC Implementation Plans)	Number of Locomotives to be Equipped	Number of Locomotives Completely Equipped to Date	Locomotive: Number of Radios to be Installed	Locomotive: Number of Radios Installed to Date	Miles of Track to be Mapped	Miles of Track Mapped to Date	Spectrum Obtainment Complete	Estimated Spectrum Obtainment Date	Submitted Safety Plan	Estimated Revenue Service Demo Start Year‡
Long Island Rail Road	FRA-2010-0031	776	0	776	0	611	63	Yes	NA	No	2016
MARC	FRA-2010-0038	62	0	62	0	NA	NA	No	Information not provided yet	No	Information not provided yet
Massachusetts Bay Transit Authority	FRA-2010-0030	310	0	310	0	350	0	Yes	NA	No	2020
Metro-North Commuter Railroad	FRA-2010-0032	681	0	681	0	765	765	No	Information not provided yet	No	2016
Nashville Regional Transportation Authority	FRA-2010-0040	14	0	14	0	32	32	No	Host railroad is acquiring	No	2016
New Jersey Transit	FRA-2010-0033	433	2	433	0	544	544	No	July 2016	No	2016
New Mexico Rail Runner Express	FRA-2010-0045	23	16	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	No	Information not provided yet
Norfolk Southern	FRA-2010-0060	3,400	0	3,411	310	10,904	10,904	Yes	NA	No	2015
North County Transit District (San Diego)	FRA-2010-0049	17	17	17	17	60	60	Yes	NA	No	2016
Northeast Illinois Regional Commuter Rail Corp. (Metra)	FRA-2010-0042	526	226	526	225	438	0	No	Information not provided yet	No	2018
Northern Indiana Commuter Transportation District	FRA-2010-0043	73	0	73	0	103	0	No	Information not provided yet	No	2018
Peninsula Corridor Joint Powers Board (San Fran)	FRA-2010-0051	67	63	67	63	52	52	Yes	NA	No	2015
Port Authority Trans-Hudson (PATH)	FRA-2010-0034	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	Information not provided yet	No	2016
Portland & Western Railroad	FRA-2010-0073	33	13	NA	NA	Host railroad is acquiring	Host railroad is acquiring	Host railroad is acquiring	NA	No	2015
San Joaquin Regional Rail Commission	**	15	0	15	0	Host railroad is acquiring	Host railroad is acquiring	Yes	NA	No	2016
Sounder Commuter Rail	FRA-2010-0053	32	28	32	28	10.4	10.4	Yes	NA	No	2015

*Railroad has indicated it will provide information as part of the American Short Line and Regional Railroad Association's August report.

**Implementation details contained in host railroad's implementation plan file.

‡Some railroads use revenue service demo to indicate full PTC implementation while others consider it when they have finished the portions of the PTC system they are responsible to complete.

Railroad/Agency Name	Docket Number (PTC Implementation Plans)	Number of Locomotives to be Equipped	Number of Locomotives Completely Equipped to Date	Locomotive: Number of Radios to be Installed	Locomotive: Number of Radios Installed to Date	Miles of Track to be Mapped	Miles of Track Mapped to Date	Spectrum Obtainment Complete	Estimated Spectrum Obtainment Date	Submitted Safety Plan	Estimated Revenue Service Demo Start Year ‡
South Florida Regional Transit Authority	FRA-2010-0039	47	12	47	0	72.6	14.5	No	Information not provided yet	No	2017
Southern California Regional Rail Authority	FRA-2010-0048	109	109	109	109	361	361	Yes	NA	Yes	2015
Southern Pennsylvania Transportation Authority	FRA-2010-0036	290	142	290	142	252	240	Yes	NA	Yes	2015
Terminal Railroad Association of St. Louis Railroad *	FRA-2010-0070	*	*	*	*	*	*	*	*	No	*
Tri Met Commuter Rail	FRA-2010-0055	33	6	NA †	NA †	NA †	NA †	No	Information not provided yet	No	2015
Trinity Railway Express	FRA-2010-0044	17	0	17	0	34	0	No	Information not provided yet	No	2018
Union Pacific	FRA-2010-0061	6,532	0	6,532	1855	21,150	21,150	Yes	NA	No	2015
Utah Transit Authority Frontrunner Commuter Rail	FRA-2010-0052-	40	40	40	0	0	0	Yes	NA	No	2017
Virginia Railway Express	FRA-2010-0037	41	0	Information not provided yet	Information not provided yet	Host railroad is acquiring	Host railroad is acquiring	Yes	NA	No	Information not provided yet

*Railroad has indicated it will provide information as part of the American Short Line and Regional Railroad Association's August report.

‡Some railroads use revenue service demo to indicate full PTC implementation while others consider it when they have finished the portions of the PTC system they are responsible to complete.

9. Enforcement

In the nearly seven years since RSIA was enacted and in the four and a half years since the railroads submitted their PTCIPs, FRA has observed a wide range of efforts and resources that have been applied to PTC by different railroads. For railroads that are not in full compliance with the PTC statute and regulations on the date of the implementation deadline, and in keeping with the clear direction of the RSIA statute, FRA will pursue enforcement efforts against these railroads.

As with all FRA enforcement action, FRA's use of its enforcement tools will be targeted to maximize safety, save lives in the event of an accident, and bring railroads into compliance with the PTC statute and regulations. Certain enforcement actions, such as prohibiting service on specific routes, may potentially result in sustained and disruptive impacts on the movement of freight and passengers in those locations until full implementation is achieved.

FRA has a number of enforcement tools, including assessment of civil penalties, issuance of compliance or emergency order, and pursuit of injunctions or criminal penalties with the Department of Justice. Assessment of civil penalties is the most often used enforcement tool most often used to gain compliance.

As stated in FRA's long-standing enforcement policy in 49 C.F.R. Part 209 Appendix A, FRA weighs the following factors in determining which instances of noncompliance merit penalties and the amount of penalties that should be imposed:

- (1) The inherent seriousness of the condition or action;
- (2) The kind and degree of potential safety hazard the condition or action poses in light of the immediate factual situation;
- (3) Any actual harm to persons or property already caused by the condition or action;
- (4) The offending person's (i.e., railroad's or individual's) general level of current compliance as revealed by the inspection as a whole;
- (5) The person's recent history of compliance with the relevant set of regulations, especially at the specific location or division of the railroad involved;
- (6) Whether a remedy other than a civil penalty (ranging from a warning on up to an emergency order) is more appropriate under all of the facts; and
- (7) Such other factors as the immediate circumstances make relevant.

The amount of the civil penalty assessment will be based on the penalty guidelines, which were outlined in FRA's first PTC regulation issued in 2010 (see chart below)¹³. Penalties can be assessed per violation per day. In the instance of the expected widespread PTC noncompliance on January 1, 2016, and the railroads' admission that it may take up to five years for them to come into full compliance, the potential civil penalties that FRA could assess are substantial. As with all enforcement actions, FRA has inherent discretion to ensure penalties imposed are aimed at increasing compliance and raising the level of safety.

¹³ 75 Fed. Reg. 2715 (Jan. 15, 2010) and 49 C.F.R. part 236 appendix A.

Subpart I—Positive Train Control Systems <i>All numbers in U.S. dollars.</i>		
	Violation	Willful Violation
236.1005 Positive Train Control System Requirements:		
Failure to complete PTC system installation on track segment where PTC is required prior to 12/31/2015	16,000	25,000
Commencement of revenue service prior to obtaining PTC System Certification	16,000	25,000
Failure of the PTC system to perform a safety-critical function required by this section	5,000	7,500
Failure to provide notice, obtain approval, or follow a condition for temporary rerouting when required	5,000	7,500
Exceeding the allowed percentage of controlling locomotives operating out of an initial terminal after receiving a failed initialization	5,000	7,500
236.1006 Equipping locomotives operating in PTC territory:		
Operating in PTC territory a controlling locomotive without a required and operative PTC onboard apparatus	15,000	25,000
Failure to report as prescribed by this section	5,000	7,500
Non-compliant operation of unequipped trains in PTC territory	15,000	25,000
236.1007 Additional requirements for high-speed service:		
Operation of passenger trains at speed equal to or greater than 60 mph on non-PTC-equipped territory where required	15,000	25,000
Operation of freight trains at speed equal to or greater than 50 mph on non-PTC-equipped territory where required	15,000	25,000
Failure to fully implement incursion protection where required	5,000	7,500
236.1009 Procedural requirements:		
Failure to file PTCIP when required	5,000	7,500
Failure to amend PTCIP when required	5,000	7,500
Failure to obtain Type Approval when required	5,000	7,500
Failure to update NPI	5,000	7,500
Operation of PTC system prior to system certification	16,000	25,000
236.1011 PTCIP content requirements:		
Failure to install a PTC system in accordance with subpart I when so	11,000	16,000

required		
236.1013 PTCDP content requirements and Type Approval:		
Failure to maintain quality control system	5,000	7,500
Inappropriate use of Type Approval	5,000	7,500
236.1015 PTCSP content requirements and PTC System Certification:		
Failure to implement PTC system in accordance with the associated PTCSP and resultant system certification	16,000	25,000
Failure to maintain PTC system in accordance with the associated PTCSP and resultant system certification	16,000	25,000
Failure to maintain required supporting documentation	2,500	5,000
236.1017 Independent third party Verification and Validation:		
Failure to conduct independent third party Verification and Validation when ordered	11,000	16,000
236.1019 Main line track exceptions:		
Revenue operations conducted in non-compliance with the passenger terminal exception	16,000	25,000
Revenue operations conducted in non-compliance with the limited operations exception	16,000	25,000
Failure to request modification of the PTCIP or PTCSP when required	11,000	16,000
Revenue operations conducted in violation of (c)(2)	16,000	25,000
Revenue operations conducted in violation of (c)(3)	25,000	25,000
236.1021 Discontinuances, material modifications, and amendments:		
Failure to update PTCDP when required	5,000	7,500
Failure to update PTCSP when required	5,000	7,500
Failure to immediately adopt and comply with approved RFA	5,000	7,500
Discontinuance or modification of a PTC system without approval when required	11,000	16,000
236.1023 Errors and malfunctions:		
Railroad failure to provide proper notification of PTC system error or malfunction	5,000	7,500
Failure to maintain a PTC Product Vendor List	2,500	5,000
Supplier failure to provide proper notification of previously	5,000	7,500

identified PTC system error or malfunction		
Failure to provide timely notification	5,000	7,500
Failure to provide appropriate protective measures in the event of PTC system failure	15,000	25,000
236.1027 Exclusions:		
Integration of primary train control system with locomotive electronic system without approval	5,000	7,500
236.1029 PTC system use and en route failures:		
Failure to determine cause of PTC system component failure without undue delay	5,000	7,500
Failure to adjust, repair, or replace faulty PTC system component without undue delay	5,000	7,500
Failure to take appropriate action pending adjustment, repair, or replacement of faulty PTC system component	15,000	25,000
Non-compliant train operation within PTC-equipped territory with inoperative PTC onboard apparatus	5,000	7,500
Interference with the normal functioning of safety-critical PTC system	15,000	25,000
Improper arrangement of the PTC system onboard apparatus	2,500	5,000
236.1033 Communications and security requirements:		
Failure to provide cryptographic message integrity and authentication	5,000	7,500
Improper use of revoked cryptographic key	5,000	15,000
Failure to protect cryptographic keys from unauthorized disclosure, modification, or substitution	5,000	15,000
Failure to establish prioritized service restoration and mitigation plan for communication services	5,000	7,500
236.1035 Field testing requirements:		
Field testing without authorization or approval	10,000	20,000
236.1037 Records retention:		
Failure to maintain records and databases as required	7,500	15,000
Failure to report inconsistency	10,000	20,000
Failure to take prompt countermeasures	10,000	20,000

Failure to provide final report	2,500	5,000
236.1039 Operations and Maintenance Manual:		
Failure to implement and maintain Operations and Maintenance Manual as required	3,000	6,000
236.1043 Task analysis and basic requirements:		
Failure to develop and maintain an acceptable training program	10,000	20,000
Failure to train persons as required	2,500	5,000
Failure to conduct evaluation of training program as required	2,500	5,000
Failure to maintain records as required	1,500	3,000
236.1045 Training specific to office control personnel:		
Failure to conduct training unique to office control personnel	2,500	5,000
236.1047 Training specific to locomotive engineers and other operating personnel:		
Failure to conduct training unique to locomotive engineers and other operating personnel	2,500	5,000
236.1049 Training specific to roadway workers:		
Failure to conduct training unique to roadway workers	2,500	5,000

The Department's GROW AMERICA Act, submitted to Congress in April 2014 and again in March 2015, proposed that Congress provide FRA with additional authorities that would address the "safety gap" that will exist for many railroads between January 1, 2016, and full PTC implementation. The goal of all of these potential interim safety measures would be to enhance adequate safety between now and the time that the railroads come into full compliance with PTC requirements.

The Department also requested these new authorities to allow FRA to review, approve, and require interim safety measures for individual railroads that may fail to meet the PTC deadline, such as allowing portions of PTC to be turned on for certain segments of track rather than waiting for an entire system to be operational.

These interim requirements will not serve as an extension of the PTC deadline; rather, they are strictly designed to protect the public safety while bringing the railroads into compliance quickly, completely, and safely.

GROW AMERICA request that Congress grant FRA, among other authorities, to:

- (1) Provide FRA authority over PTC system oversight and their operation under controlled conditions before final system certification is complete. This would allow for the incremental use of PTC systems as they are progressively rolled out and

simultaneously increase operating safety because railroads could “turn on” portions of PTC on certain segments of track prior to turning on the technology for the entire system; and

- (2) Authorize FRA to require railroads to use alternative safety technologies on specified line segments in lieu of PTC until PTC is fully implemented.

Congress has not acted on these measures.

FRA believes these interim requirements will save lives while bridging the gap to successful PTC implementation.

10. Conclusion

Safety is the Federal Railroad Administration’s top priority, and safety drives everything that we do at FRA. The rail system is not as safe as it could be without full implementation of PTC. On January 1, 2016, FRA intends to enforce the PTC mandate that Congress established in 2008.

Appendix A: Amtrak-Specific PTC Implementation Data

As of June 9, 2015, Amtrak states:

- 85% of locomotives to date have been equipped with PTC, including approximately 97% of locomotives for the Northeast Corridor (NEC);
- 63% of track miles have been mapped;
- Currently on the NEC, New Haven, CT to Boston, MA and portions of the railroad between New York, NY and Washington, DC, have PTC in service;
- By December 2015, PTC will be in service throughout the sections of the NEC operated and maintained by Amtrak. This will leave a 56 mile section without PTC on the segment owned by the states of New York and Connecticut, and operated and maintained by Metro-North Commuter Railroad Company. The Harold Interlocking in Queens, N.Y. additionally lacks PTC deployment; this section of the NEC is owned by Long Island Rail Road; and
- Outside of the NEC, PTC is currently in service on the 97 miles of the Michigan Line owned by Amtrak between Porter, IN and Kalamazoo, MI. By December 2015, the Amtrak-owned Keystone Corridor from Philadelphia, PA to Harrisburg, PA and the Empire Connection in New York will also be completed and in service.