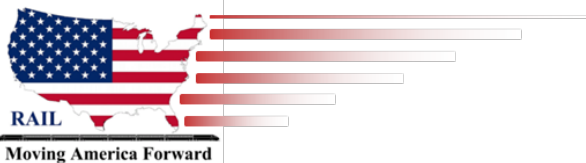


PTC Collaboration Session

First of Six in 2019 and 2020

February 6, 2019

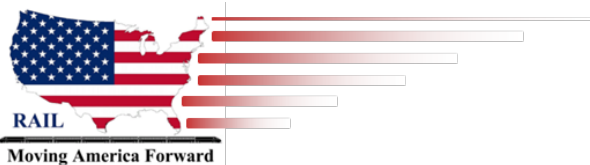
*To promote information-sharing,
best practices, and collaboration
between FRA and industry*



Topics For Discussion

- Current PTC Status
- FRA PTC Organization & Current Initiatives
- PTC Safety Plan – FRA Approach to Certification (2019-2020)
- Material Modifications to PTC Systems
- PTC Regulation During and Post Full Implementation

Current PTC Status as of Q4 2018



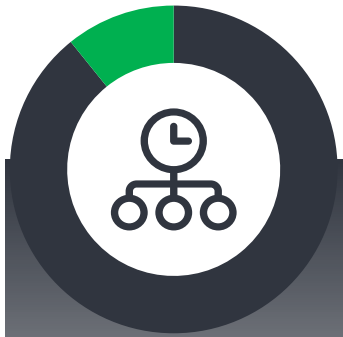
Current Status – High-level Points

- **Railroad Industry Met or Exceeded the Statutory 2018 Requirements**
 - 4 railroads self-reported that they fully implemented an FRA-certified and interoperable PTC system on all of their required route miles
 - Metrolink (Southern California)
 - North County Transit District (Southern California)
 - PATH (New York / New Jersey)
 - Portland & Western Railroad (Portland Metropolitan Area)
 - 36 railroads demonstrated they met the six robust criteria necessary to qualify for an alternative schedule and sequence, and FRA received all necessary written notifications by *December 21, 2018*, in advance of the deadline
- **Several Railroads Requested Final Deadlines Before December 31, 2020**
- **As of December 31, 2018, PTC systems were in operation on almost 46,000 of the nearly 58,000 route miles that are subject to the statutory mandate**



Current Status – Alternative Schedule and Substitute Criteria

STATUTORY REQUIREMENTS

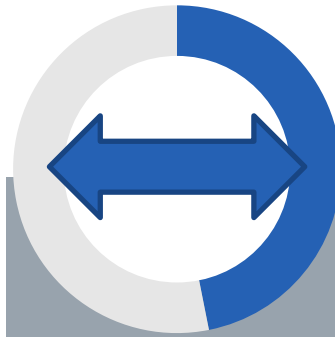


All railroads met the December 31, 2018 statutory requirements for an alternative schedule.

Four railroads achieved full implementation.

100%

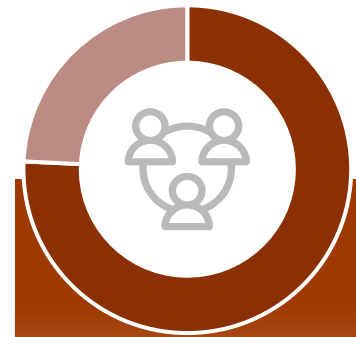
SUBSTITUTE CRITERIA



15 railroads out of 32 eligible railroads requested testing-related substitute criteria (instead of RSD). **Two of these railroads still initiated RSD by 12/31/2018.**

47%

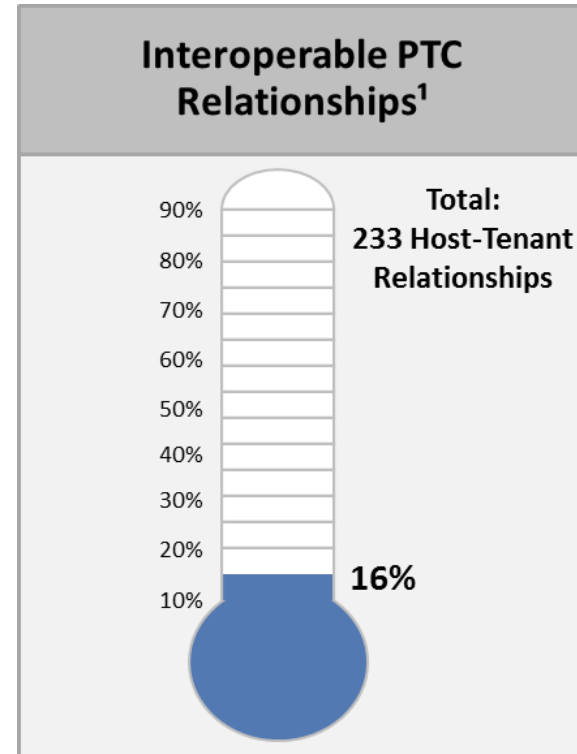
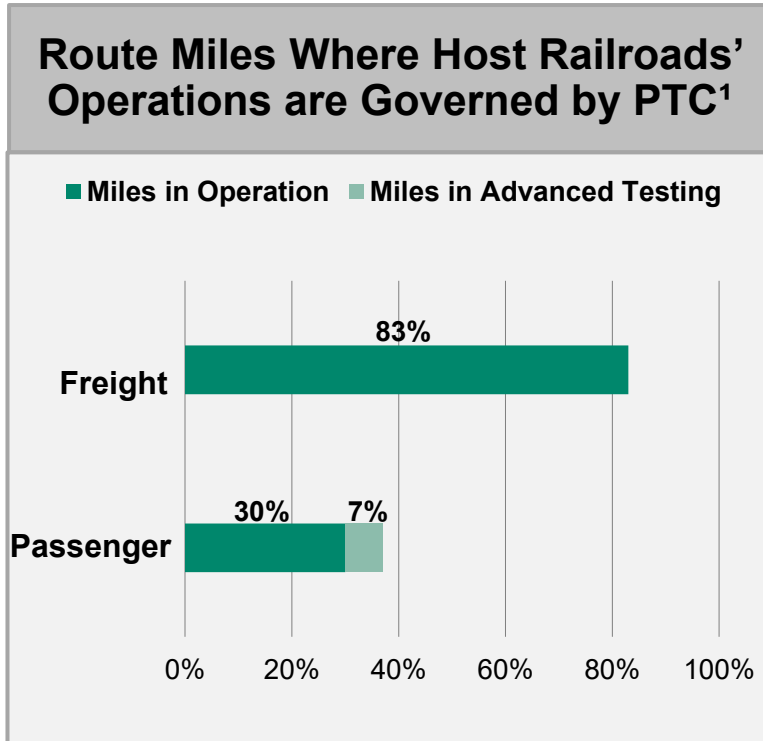
ALTERNATIVE SCHEDULES



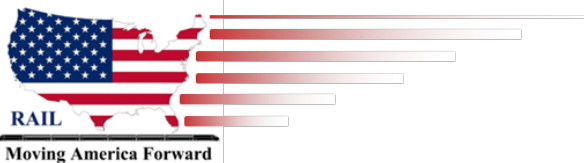
FRA has formally approved **25** alternative schedule and sequence requests, to date. All remaining decisions will be issued *before* statutory 90-day deadline.

75%

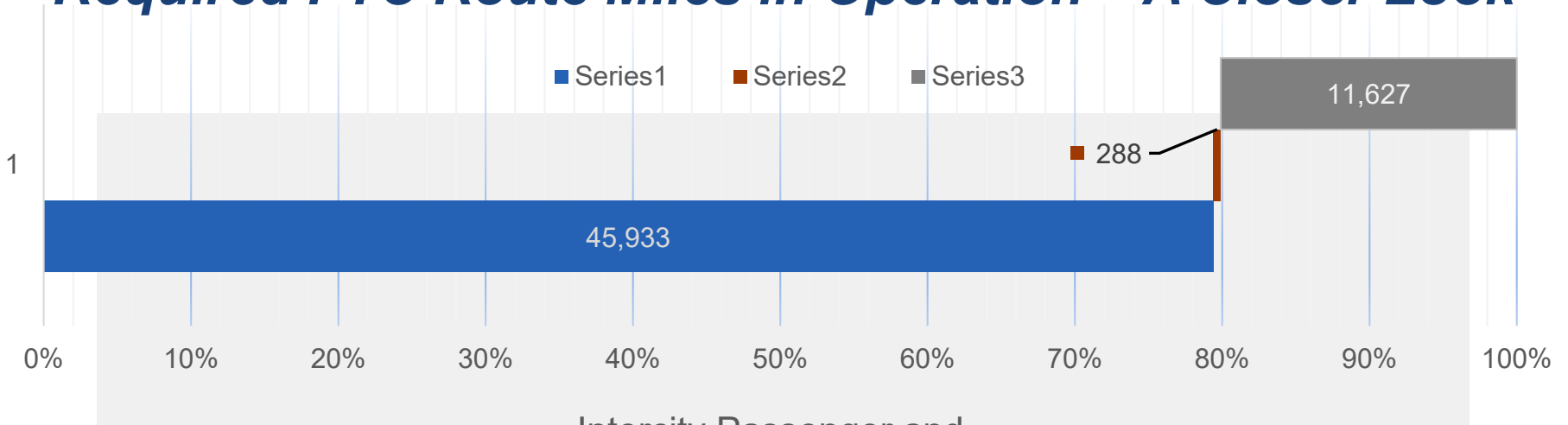
Current Status – Host Railroad Mileage and Interoperability



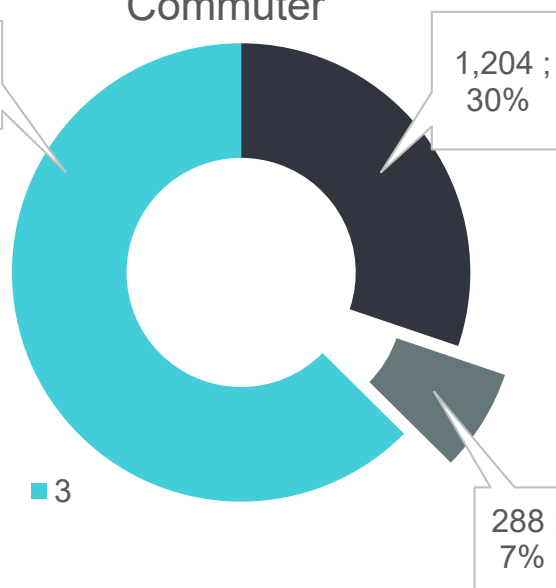
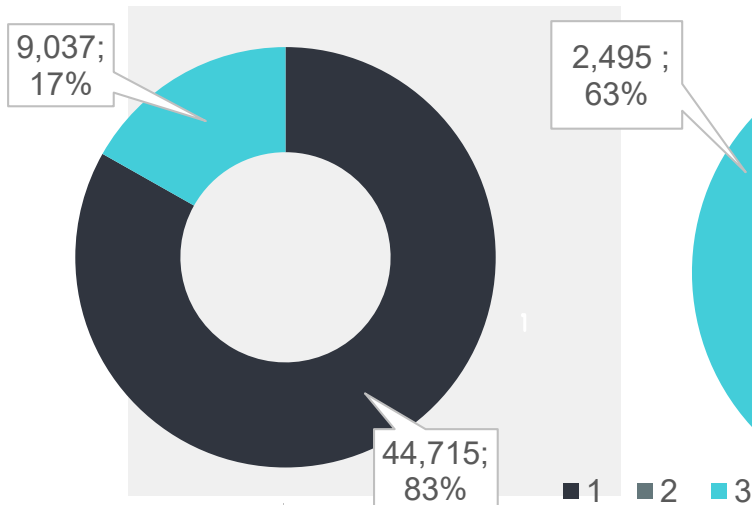
¹Based on Railroads' Self-reported Progress and PTC Implementation Plans as of December 31, 2018



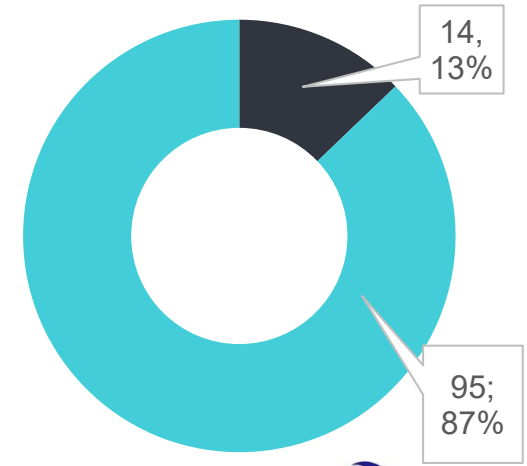
Required PTC Route Miles in Operation – A Closer Look




Intercity Passenger and Commuter

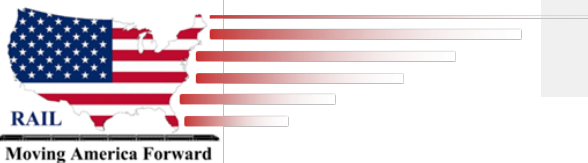
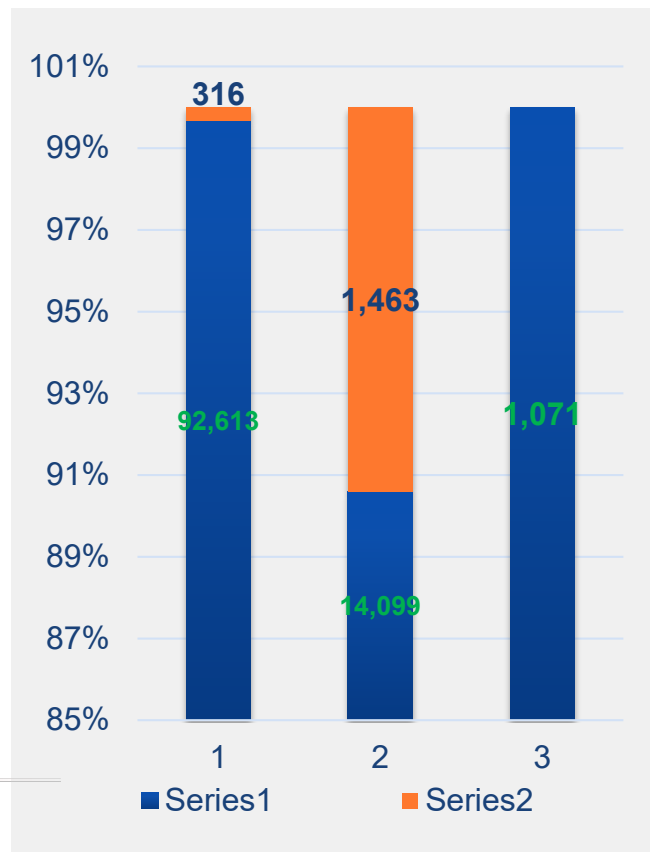


Short Line/Other

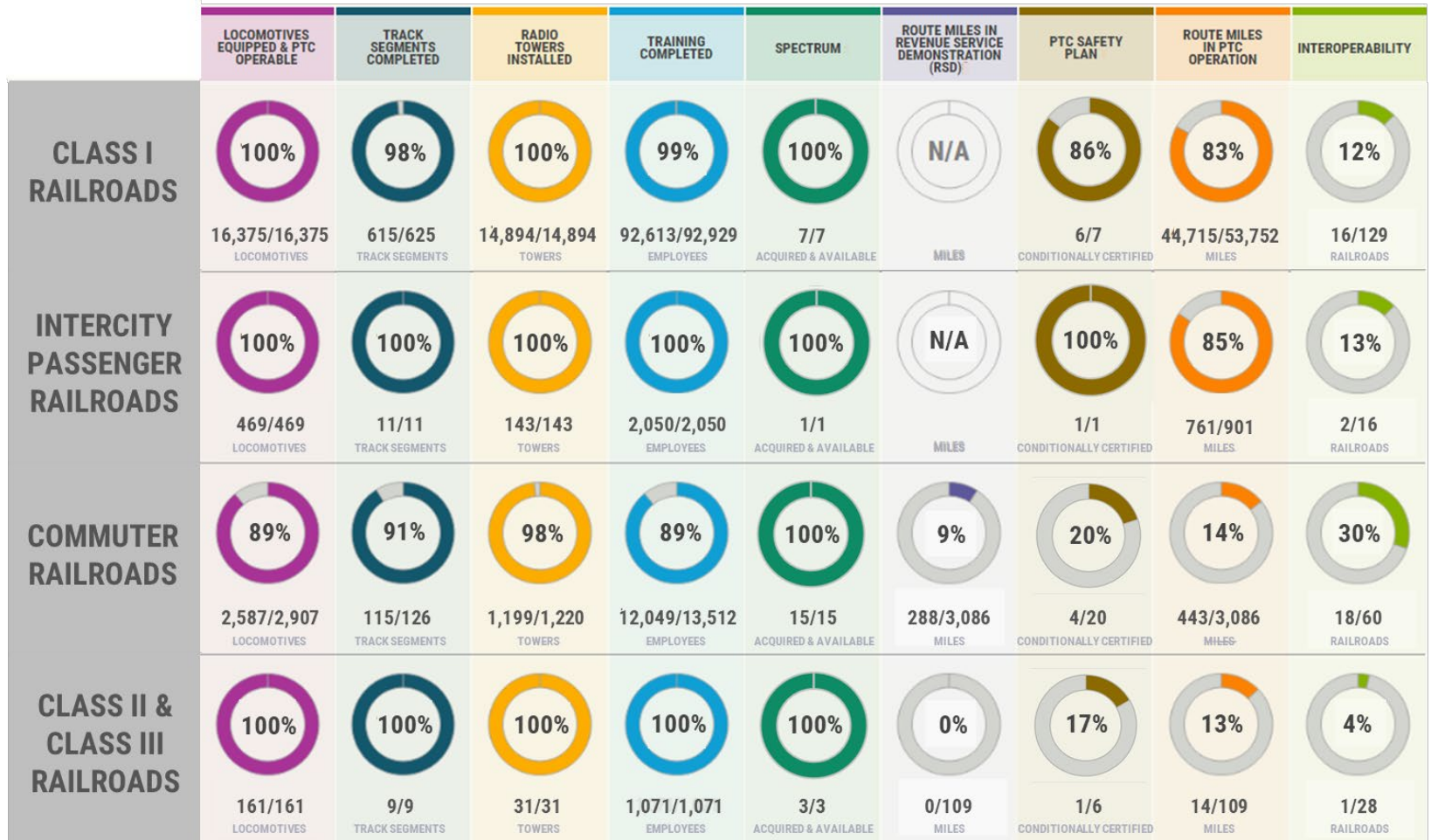


Closer Look at Status of PTC Training

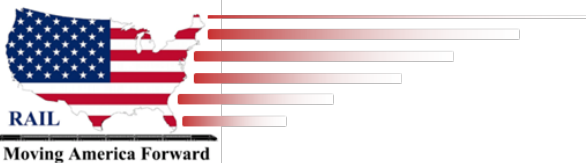

PTC Training Completed 98%



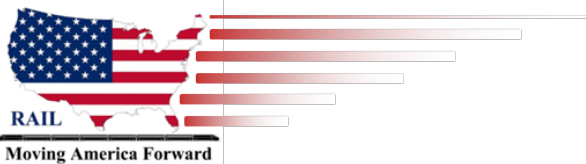
Progress by Sector Toward Full PTC System¹



¹Based on Railroads' Self-reported Progress and PTC Implementation Plans as of December 31, 2018

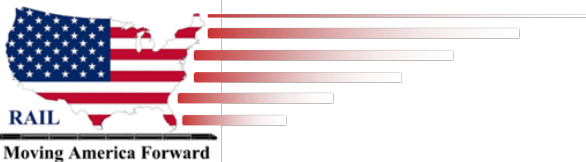
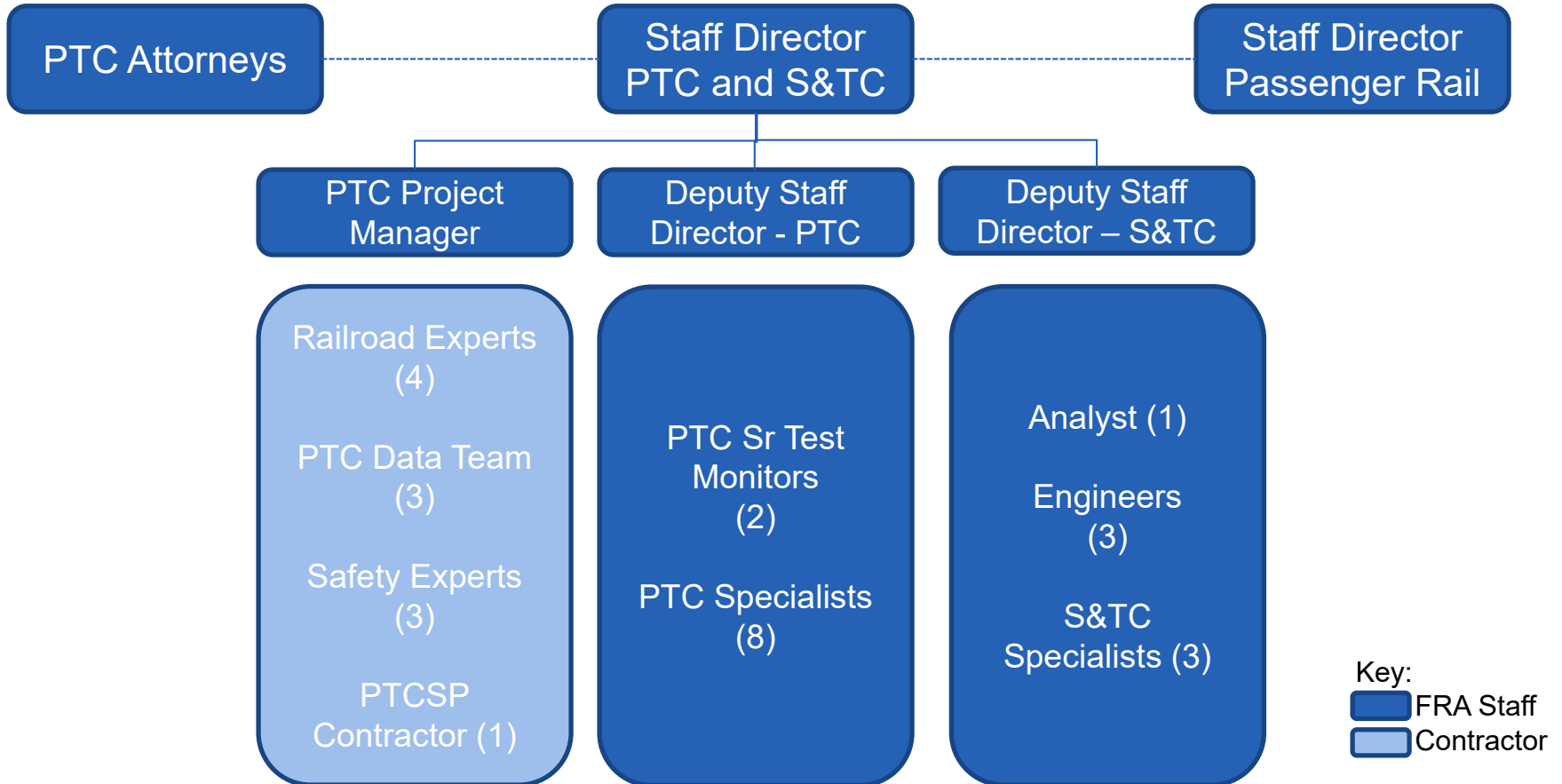


PTC Organization & Current Initiatives



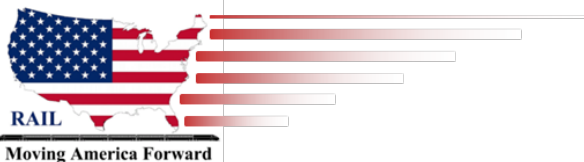
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FRA PTC Organization

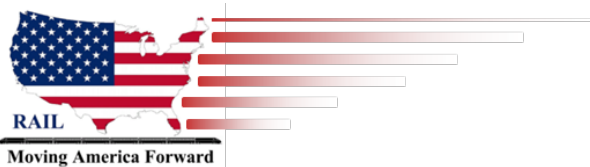


Current Initiatives

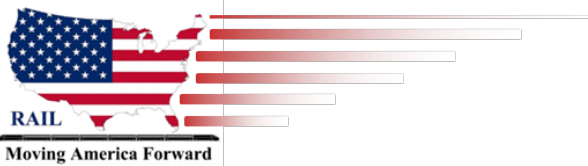
- **Revenue Service Demonstration:** Provide continued technical assistance to railroads that are in the initial stages of field testing and have not yet initiated RSD
- **Interoperability:** Confirm the PTC Implementation Status of All Tenant Railroads
 - Meeting with Class I, Amtrak, and commuter host railroads to validate and confirm tenant PTC requirements
 - Meeting with all tenant railroads to review their PTC program of work, schedule, and technical implementation status (host railroads' PTC Implementation Plans reference approximately 115 unique tenant railroads in total)
 - Document the status of each tenant railroad
 - Provide any requested technical support
- **PTC Safety Plans:** Streamline the Review and Approval Process
- **PTC Reporting:** Errors and Malfunctions Forms
- **PTC Compliance Manual:** Inspection Approach



PTC Specialist Perspective

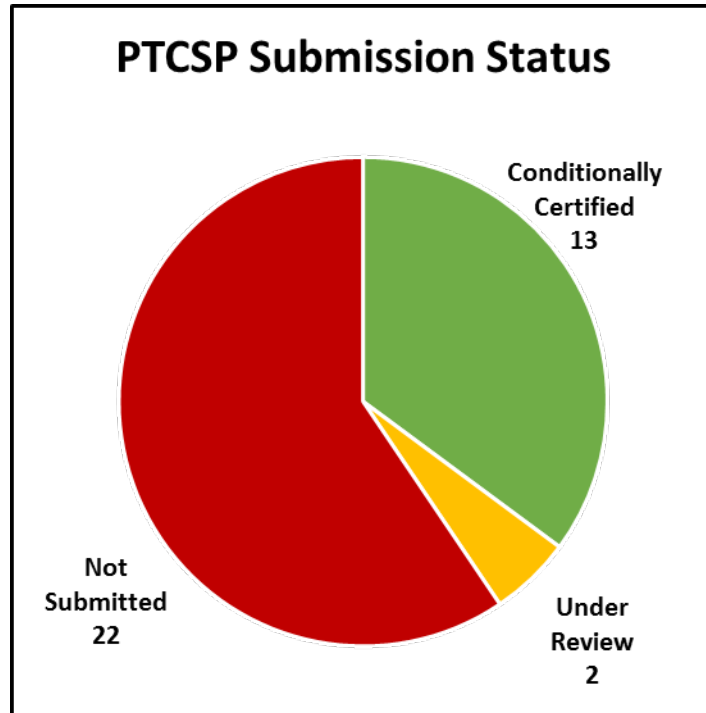


PTC Safety Plans

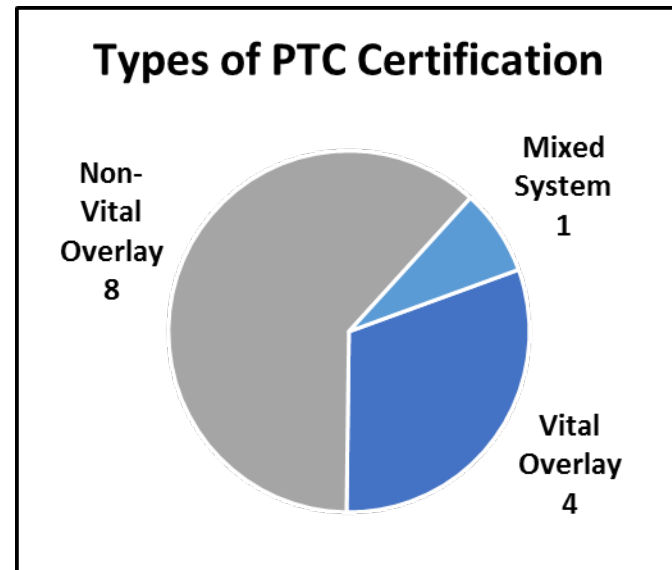


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PTC Safety Plans (Host Railroads Only) Current Status (1)



Average Number of Days in Review
331 days



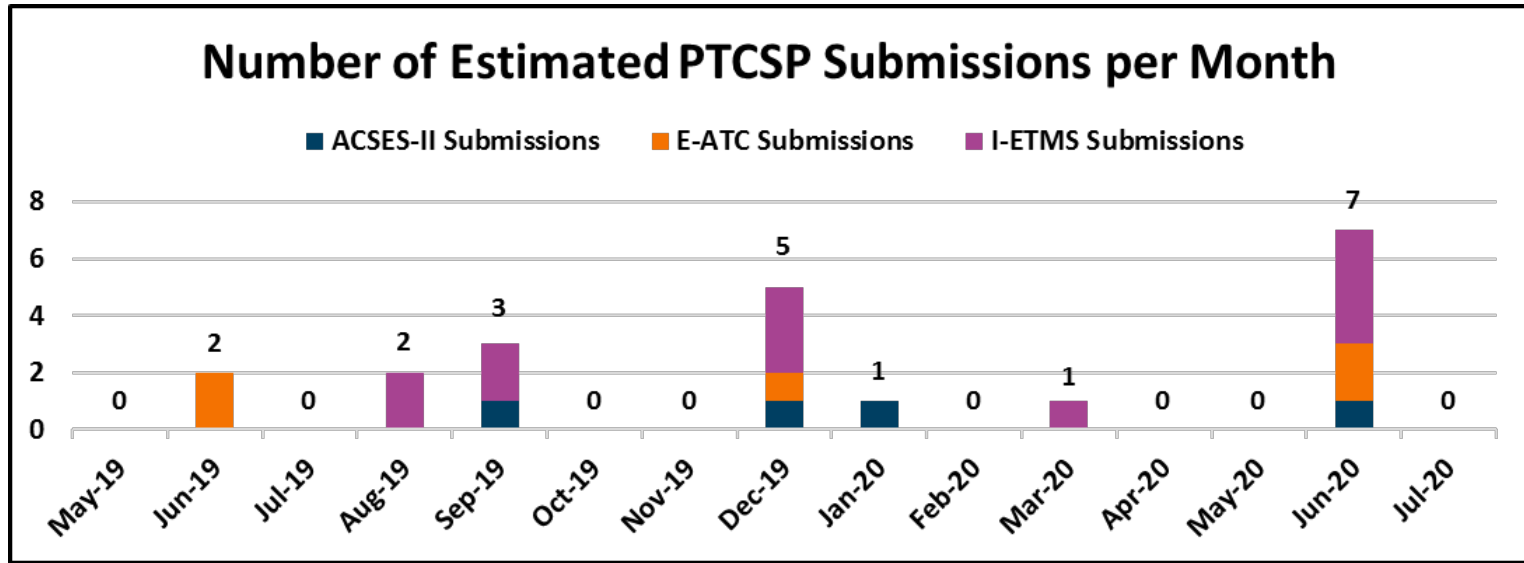
PTC Safety Plans

Current Status (2)

| PTCSP Submission Status by PTC Type | | | |
|--|-----------------------------------|---|---|
| PTC Type | Number of PTCSPs Submitted | Average Number of Days in Review | Number of PTCSPs Not Yet Submitted |
| ACSES-II | 2 | 310 | 4 |
| CBTC | 1 | 96 | 0 |
| E-ATC | 1 | 78 | 5 |
| I-ETMS | 10 | 319 | 13 |
| ITCS | 1 | 987 | 0 |

PTC Safety Plans

Current Status (3)

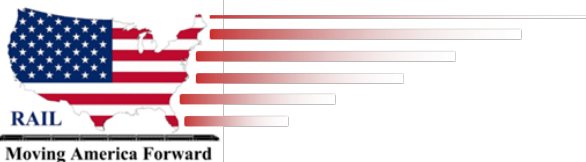


Note: One (1) PTCSP submission date still to be confirmed

PTC Safety Plans

FRA's Approach to Certification of PTC Systems from 2019 to 2020

- **Compliance with Regulatory Requirements for PTC Safety Plans**
 - § 236.1015 (d) (1 – 21) and (e) (1 – 4)
 - Descriptions may summarize and refer to other railroad documentation
- **Key Focus Areas of FRA's PTCSP Review**
 - Any Variances to Applicable PTC Development Plan and Type Approval
 - Hazard Log
 - Risk Assessment, including Residual Human Error Risk to Incursion into Work Zones
 - Configuration and Revision Control
 - Post-implementation Testing
 - Rerouting Plan
 - Safety Analysis as Required by System Type (Non-vital Overlay, Vital Overlay, Standalone, or Mixed)
- **Vendor Documentation**
 - Baseline Documentation
 - Configuration Management
 - Document Railroad-specific Variations

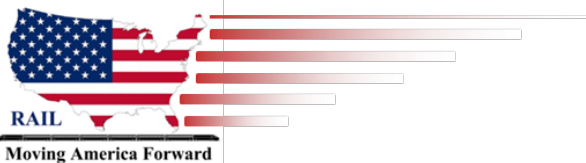


PTC Safety Plans

Working Group Updates

- **Interoperable Electronic Train Management System (I-ETMS)**
- **Advanced Civil Speed Enforcement System II (ACSES) /
Advanced Speed Enforcement System II (ASES)**
- **Enhanced Automatic Train Control (E-ATC)**

Material Modifications Management of PTCSPs



Material Modification Regulatory Requirements

Changes requiring filing of a request for amendment (RFA) (§ 236.1021(h)):

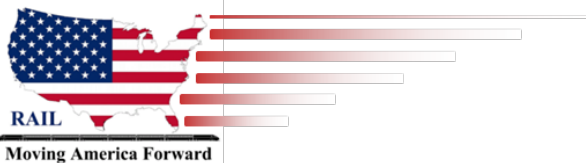
- Discontinuance of a PTC system or other appliance or device
- Decrease of a PTC system's limits
- Modification of a safety-critical element of a PTC system
- Modification of a PTC system that affects the safety-critical functionality of any other PTC system with which it interoperates

Material Modification

Discussion Topics

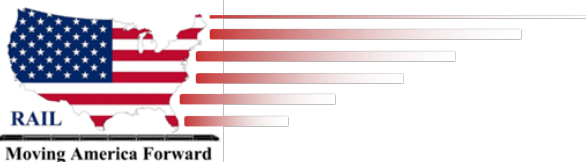
- **Simplify the post-2020 process for PTC Safety Plan changes as a result of material modifications**
 - *FRA welcomes feedback on any potential regulatory simplifications regarding material modifications to PTC Safety Plans (after initial statutorily-required PTC System Certification)*
- **How is a host railroad planning to do to ensure alignment between the PTC system and its PTC Safety Plan**
 - *How are railroads internally planning to update the PTC Safety Plan? What processes are already in place for the 12 host railroads with conditional PTC System Certification?*
- **How to address PTC system product changes that impact multiple PTCSPs**
 - *Potentially 23 I-ETMS PTCSP RFAs?*
 - *Potentially 6 E-ATC PTCSP RFAs?*

FRA's Oversight and Regulation of PTC Systems During and After Full Implementation



Oversight Focus During the Implementation of PTC Systems (Throughout 2019 and 2020)

- **Compliance with Governing PTC Implementation Plans (PTCIP)**
 - ❑ Railroads must implement a PTC system in accordance with the applicable PTCIP (i.e., the one that governs implementation on the applicable main line)
 - ❑ Railroads must comply with the specific schedule and risk-based track segment sequence, including the railroad's schedule for:
 - ✓ Field Testing and Revenue Service Demonstration
 - ✓ Achieving Interoperability with Each Tenant Railroad, as Specified
 - ✓ Submission of a PTC Safety Plan (Host Railroads Only)
 - ✓ Activation of a PTC System on All Route Miles (or Remaining Route Miles)
- **Purpose and Reminders:**
 - ❑ By statute, FRA must conduct compliance reviews at least once per year to determine whether railroads are adhering to their PTCIPs.
 - ❑ FRA may assess \$28,474 per violation under 49 U.S.C. § 20157(e)(1)–(4).



Oversight Focus During the Implementation of PTC Systems (Once the PTC System Is Certified by FRA) – Slide 1 of 6

❖ Compliance with Governing PTC Safety Plan and PTC System Certification

- ❑ A host railroad *and* any other railroads that operate on the host railroad's main lines subject to the statutory mandate must also comply with:
 - ✓ All applicable provisions of the **host railroad's** PTC Safety Plan, and
 - ✓ The conditions FRA placed on its PTC System Certification for the specific PTC system at issue

Exception: Unless the operations are subject to an exception under 49 CFR § 236.1006(b), as set forth in the host railroad's PTC Implementation Plan (e.g., exceptions for certain freight yard movements and very limited Class II or III movements)

Oversight Focus During the Implementation of PTC Systems (Once the PTC System Is Certified by FRA) – Slide 2 of 6

❖ Compliance with Statutory Early Adopter Provisions and Reporting Requirements

– Background –

As a reminder, the PTC Enforcement and Implementation Act of 2015 imposes a temporary prohibition on FRA's authority to enforce certain PTC regulations.

- **When?** October 29, 2015 → *One year after* the last Class I railroad obtains PTC System Certification and finishes implementing a PTC system on all of its required lines.
- **What is the scope of the prohibition?** Railroads may not be subject to the operational restrictions (e.g., speed restrictions) in 49 CFR §§ 236.567 or 236.1029 that would apply where a controlling locomotive experiences a PTC system failure; a PTC-operated consist is not provided by another railroad in interchange; or a PTC system otherwise fails to initialize, cuts out, or malfunctions.

Oversight Focus During the Implementation of PTC Systems (Once the PTC System Is Certified by FRA) – Slide 3 of 6

- ❖ **Compliance with Statutory Early Adopter Provisions and Reporting Requirements**
 - **Is this prohibition unlimited?** No, the prohibition preventing FRA from enforcing the operational restrictions applies only if the railroad operates at an equivalent or greater level of safety than the level achieved immediately prior to PTC system implementation.
 - **So, what operational restrictions do apply and what does FRA enforce during this period?** The safety measures (including operating rules) that the railroad states, in its PTC Safety Plan, it will put in place during a system failure. 49 U.S.C. § 20157(j)(3); 49 CFR § 236.1009(d)(3).
 - **What safety assurances does Congress require?** If an FRA-certified PTC system fails to initialize, cuts out, or malfunctions, the affected railroad shall make reasonable efforts to determine the cause of the failure and adjust, repair, or replace any faulty component causing the system failure in a timely manner.



Oversight Focus During the Implementation of PTC Systems (Once the PTC System Is Certified) – Slide 4 of 6

❖ Compliance with Statutory Early Adopter Provisions and Reporting Requirements

– Reporting Requirements –

- **When do the statutory reporting requirements apply?** During the period set forth in the statute (October 29, 2015 → ~December 31, 2021)
- **What triggers the requirement?** When an *FRA-certified* PTC system **fails to initialize, cuts out, or malfunctions**, the railroad **shall submit a notification to the appropriate FRA regional office within 7 days** (or under alternative location and deadline requirements set by FRA).

 - Notification must include a description of safety measures the railroad has in place.

- **What is the current requirement?** The above reporting requirement is in effect for all **12 host railroads** that have obtained conditional PTC System Certification and **any tenant railroad** that has commenced PTC-governed operations on such main lines.

 - Although not currently required, FRA encourages railroads w/ certified PTC systems to submit a courtesy copy of such notifications to FRA's Secure Information Repository, so FRA can begin centralized analysis.

Oversight Focus During the Implementation of PTC Systems (Once the PTC System Is Certified) – Slide 5 of 6

❖ Compliance with Statutory Early Adopter Provisions and Reporting Requirements

– Reporting Requirements –

- **FRA's Initiative** – The statute authorizes FRA to establish **an alternative reporting deadline** (instead of within 7 days of a PTC system initialization failure, cut out, or malfunction) and **an alternative reporting location** (instead of the applicable FRA regional office)
 - ❑ **FRA is currently considering alternative options and welcomes feedback. Ideas?**
 - Centralized reporting to Washington, DC on a **monthly** basis
 - A new monthly form identifying # of failures to initialize, cut outs, and malfunctions
 - Would additional breakdowns of each required high-level category be useful?
 - Would industry be interested in an electronic, fill-in form (like 2015 monthly PTC questionnaires)?
 - ❑ Once form is developed, FRA will publish a Federal Register notice and seek comment during a 60-day period, before submitting form/Information Collection Request to the Office of Management and Budget.
- **Reminders:**
 - FRA is authorized **only** to establish an alternative reporting deadline/frequency and location.
 - FRA cannot change the **scope** of the reporting requirement (the statutory reporting requirement encompasses *all* failures to initialize, cut outs, and malfunctions).



Oversight Focus During the Implementation of PTC Systems – Slide 6 of 6

❖ Full Implementation of FRA-certified and Interoperable PTC Systems on All Required Main Lines As Soon as Possible

All railroads should strive to fully implement FRA-certified and interoperable PTC systems “as soon as practicable,” and not later than December 31, 2020, as the statutory mandate requires.

FRA stands ready to provide technical assistance to the greatest extent possible.

❖ Reminders Regarding Interoperability

All operations of a host railroad and its tenant railroads must be governed by an FRA-certified and interoperable PTC system on all route miles subject to the statutory mandate, except as otherwise permitted under 49 CFR § 236.1006(b) (including permanent exceptions for short, limited movements by Class II and III railroads, and temporary exceptions where interoperability may be achieved by December 31, 2023).

“Interoperability” means that a host railroad’s and a tenant railroad’s trains operating on the same main line are able to communicate with and respond to the PTC system, including uninterrupted movements over property boundaries.



Oversight Focus Both During & After the Full Implementation of PTC Systems

Slide 1 of 2

❖ Reliability and Performance of PTC Systems

- FRA will monitor implementation and performance via railroads' required reporting
 - **Statutory and Regulatory – Progress Reports Toward Full Implementation**
 - Quarterly PTC Progress Report Form (FRA F 6180.165, OMB Control No. 2130-0553)
 - Annual PTC Progress Report Form (FRA F 6180.166, OMB Control No. 2130-0553)
 - **Statutory (Previous Slides) –** The reporting requirements under the early adopter provisions remain in effect until approximately December 31, 2021 (however, the actual end date is one year **after** the last Class I railroad obtains PTC System Certification and finishes fully implementing an interoperable PTC system on all of its required route miles).
 - **Regulatory (Only Applies After Full Implementation) –** Beginning April 16 *after* a railroad fully implements its PTC system, a railroad must submit an **annual report regarding PTC system failures** that occurred during prior calendar year, with specific information re: locomotive, wayside, communications, and back office system failures. See 49 CFR § 236.1029(h).
 - **Vendors' and Suppliers' Required Notifications to Railroads and FRA Under 49 CFR § 236.1023 (Errors and Malfunctions)**



Oversight Focus Both During & After the Full Implementation of PTC Systems

Slide 2 of 2

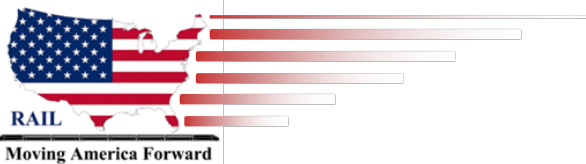
❖ Compliance with All Technical Requirements Under 49 CFR Part 236, Subpart I

- FRA is authorized to conduct audits to determine whether a railroad is in compliance with 49 CFR part 236, subpart I.
 - FRA “shall be afforded reasonable access to monitor, test, and inspect processes, procedures, facilities, documents, records, design and testing materials, artifacts, training materials and programs, and any other information used in the design, development, manufacture, test, implementation, and operation of the system, as well as interview any personnel” 49 CFR § 236.1009(h).

❖ Ongoing Coordination with the Industry to Improve PTC System Performance, Reliability, and Efficiency



Questions and Suggestions for FRA



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