# *PTC Collaboration Session*
## *Third of Six in 2019 and 2020*

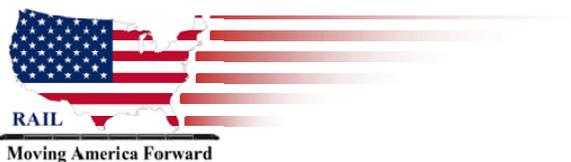## October 2, 2019

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

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F E D E R A L   R A I L R O A D   A D M I N I S T R A T I O N

# *Topics For Discussion*

- Industry's Progress Toward Full Implementation as of June 30, 2019

- FRA's Current PTC Priorities:
  - Testing & Approvals
  - Interoperability
  - PTCSP Review & Support
  - Supplier Outreach

- Overview of Full Implementation, Including Interoperability and Findings from FRA's Interoperability Initiative

- Future Updates to Certain Reporting Forms – Progress and Reliability

- Breakout Sessions (ACSES II, I-ETMS & ITC, and E-ATC)

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*Industry's Progress Toward
Full Implementation of PTC Systems
as of Quarter 2 (June 30, 2019)*

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# *Overview of Progress*

*As of June 30, 2019*

- **Status of Host Railroads' PTC-governed Operations**

  - As of June 30th, PTC systems were in operation on **~50,305** (87%) of the 57,875 required route miles—a 7% increase since December 31, 2018

  - In addition, railroads were operating PTC systems in revenue service demonstration (RSD) on **~698** route miles, as of Quarter 2 of 2019

- **Status of PTC System Interoperability** (More Detail in Further Slides)

  - Host railroads have reported that **~50** tenant railroads have achieved PTC system interoperability—i.e., 22% of the required host-tenant railroad relationships

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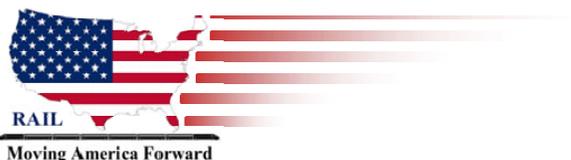# *Remaining Main Lines Where PTC Must be Activated*

*As of June 30, 2019*

- **Total Route Miles Required to Be Governed by PTC: 57,875**

- **Route Miles Where Host Railroads' Operations Were Governed by PTC as of June 30 (in RSD or Operation): ~51,003**

- **Remaining Route Mileage That Must be Governed by PTC*: ~6,872**

  *Subtracting route miles where host railroads' operations were governed by a conditionally certified PTC system, in provisional PTC operations, or in RSD as of June 30th*
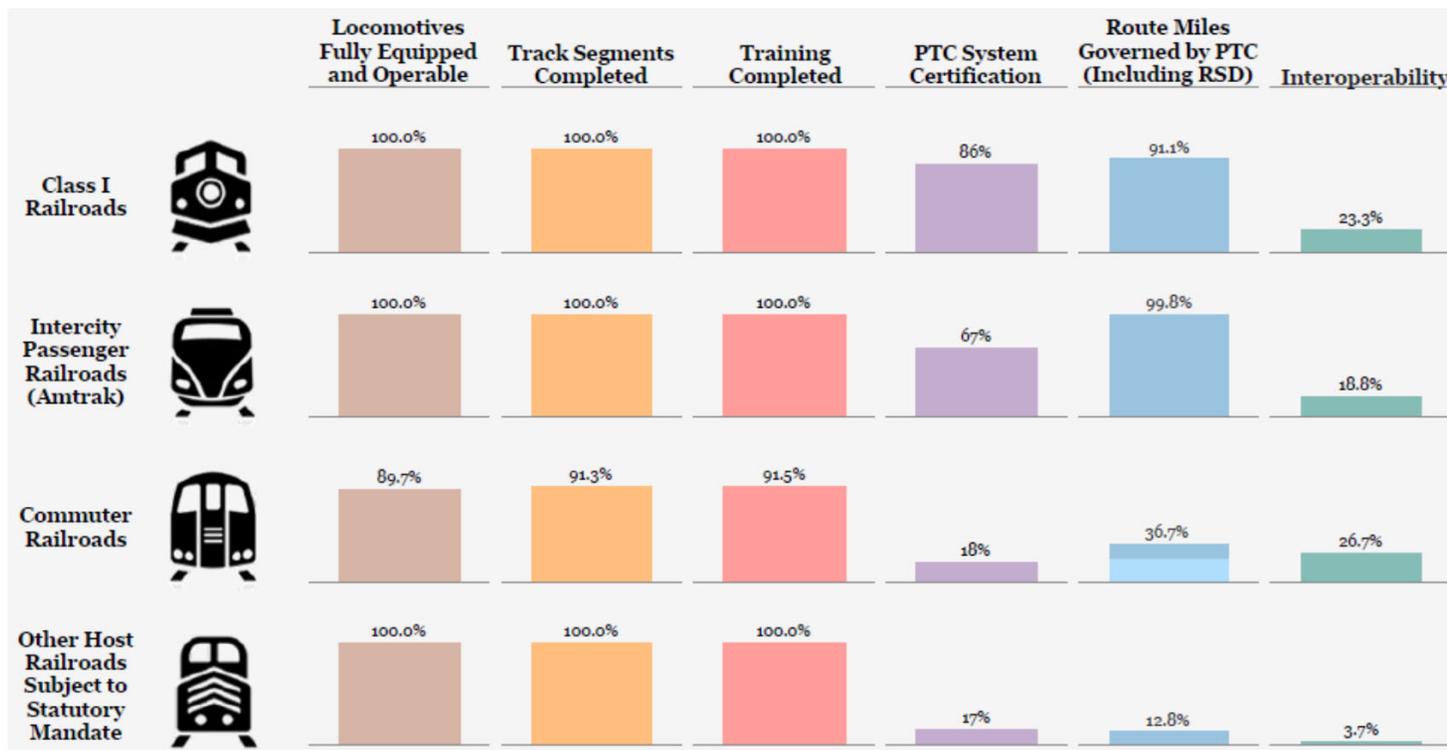
### From Their Standpoint as Host Railroads (as of June 30th)

o  Class I Railroads' Remaining Mileage: ~4,807 Route Miles (9%)

o  Amtrak's Remaining Mileage: ~1.5 Miles Route Miles (.02%)

o  Commuter Railroads' Remaining Mileage: ~1,970 Route Miles (63%)

o  Six Other Host Railroads' Remaining Mileage: ~94 Route Miles (87%)

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# Progress by Sector Toward Full PTC System Implementation

Based on Railroads' Self-reported Progress and PTC Implementation Plans as of June 30, 2019

| | Locomotives Fully Equipped and Operable | Track Segments Completed | Training Completed | PTC System Certification | Route Miles Governed by PTC (Including RSD) | Interoperability |
|---|---|---|---|---|---|---|
| Class I Railroads | 100.0% | 100.0% | 100.0% | 86% | 91.1% | 23.3% |
| Intercity Passenger Railroads (Amtrak) | 100.0% | 100.0% | 100.0% | 67% | 99.8% | 18.8% |
| Commuter Railroads | 89.7% | 91.3% | 91.5% | 18% | 36.7% | 26.7% |
| Other Host Railroads Subject to Statutory Mandate | 100.0% | 100.0% | 100.0% | 17% | 12.8% | 3.7% |

See https://www.fra.dot.gov/ptc
for the full set of infographics
summarizing progress as of Quarter 2 of 2019

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*FRA's Current PTC Priorities*
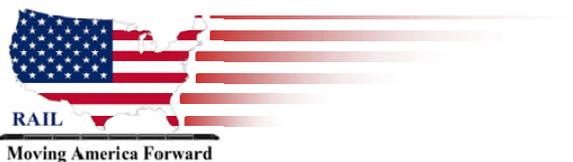
# *Recent PTC Accomplishments*

- ## Testing:
  - o   7 railroads entered RSD in 2019

- ## PTC Hours of Service:
  - o   Technical Bulletin S-19-01, Application of HoS Laws to PTC Systems

- ## Interoperability:
  - o   Clarified host-tenant railroad relationships
  - o   Met with all non-Class I, freight tenant railroads and confirmed status
  - o   Supporting interoperability testing
  - o   Tracking progress

- ## PTC Safety Plans:
  - o   Closing PTCSP conditional approval comments
  - o   Staged FRA review process
  - o   Streamlined PTCSP submission content
  - o   Review of mixed system risk assessment

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# *FRA's Current PTC Priorities*

- **Testing & Approvals:**
  - o Provide continued technical assistance to railroads that are in the initial stages of field testing and have not yet initiated RSD, including streamlining the approval process of each phase of testing
  - o Modifying the formal approval process (see next slide)

- **Interoperability:**
  - o Track the PTC system implementation status of all tenant railroads
  - o NEC interoperability
  - o Chicago interoperability
  - o Provide any requested technical support

- **PTC Safety Plans:**
  - o I-ETMS Mixed System PTCSP
  - o Finalize PNWR's E-ATC PTCSP
  - o FRA's support contract for PTCSP reviews
  - o Implementing staged PTCSP review
  - o Resolution of questions and comments through 1-1 meetings
  - o 'Traveling Tutors' continue to support railroads

- **Supplier Outreach:**
  - o ACSES II & I-ETMS Configuration Management
  - o Support to ensure that suppliers and vendors prioritize (1) addressing remaining technical issues and (2) meeting railroads' deadlines

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# *New Approach for FRA's Approval of Field Testing*

*Effective October 2, 2019*

Regarding Uncertified PTC Systems

<u>If</u> a host railroad has been authorized by FRA to conduct field testing or RSD of an uncertified PTC system (by letter) under 49 CFR § 236.1035, <u>then</u>

**FRA's PTC specialists, including FRA's test monitors, may approve via *e-mail* any request submitted to FRA's Secure Information Repository for authorization to:**

- o Expand field testing to additional main lines;
- o Expand RSD to additional main lines; and
- o Conduct interoperability testing (including field testing and RSD) with any tenant railroad utilizing a Type Approved PTC system.

***The conditions set forth in FRA's prior approval letters remain in effect.***

<u>Not covered under this approach</u>:  Any uncertified PTC systems or subsystems not yet *Type Approved* by FRA

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# *PTC Safety Plans*
## *FRA's Approach to Certification of PTC Systems from 2019 to 2020*

- **Compliance with Regulatory Requirements for PTCSPs**
  - § 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

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# *Overview of Full Implementation, Including Interoperability*

# *Requirements for Full Implementation*

*Summary Slide 1 of 2 – **Orange** Indicates Primary Outstanding Work*

1. All wayside PTC system hardware and other components have been fully installed on all route miles subject to the mandate. √ (complete)

2. All necessary spectrum has been acquired √ (complete) and is available for use.

3. Controlling locomotives and cab cars have been:
   o Fully equipped with hardware √ (complete)
   o Fully equipped with software and firmware
   o Sufficiently tested to support operations

4. **The back office, dispatch, and communications systems are fully operational.**

5. Training programs are in place √ (complete), and all required employees (in all disciplines listed under 49 CFR §§ 236.1041–1049) have been properly trained.

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*FRA understands that completion of these elements is not necessarily linear.

# *Requirements for Full Implementation*

*Summary Slide 2 of 2 – **Orange** Indicates Primary Outstanding Work*
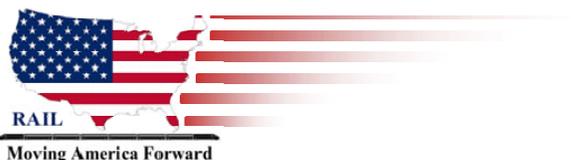
6. Field testing and **RSD** testing have been satisfactorily completed.

7. The **host railroad has submitted a PTC Safety Plan** to FRA.

8. FRA has **granted PTC System Certification to the host railroad**. The PTC system meets each technical requirement in 49 CFR part 236, subpart I (including wireless security requirements).

9. Necessary **interoperability testing** has been conducted and satisfactorily completed with all required tenant railroads (i.e., <u>unless subject to an exception</u>).

10. All host railroad, tenant railroad, and other **operations are governed by an FRA-certified and interoperable PTC system on all route miles** subject to the statutory mandate (<u>except as otherwise permitted under 49 CFR § 236.1006(b)</u>).

\*FRA understands that completion of these elements is not necessarily linear.

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# *Interoperability Challenges*

*Scope and Complexity (Including Requests for Amendments to Date)*

- **~117 distinct railroads** are implementing PTC systems, including host and tenant railroads

  - **~81 are tenant-only railroads** and might not have the same familiarity as a host railroad
  - At least 37 tenant-only railroads are commonly owned by 6 corporations

- In total, there are **~239 host-tenant railroad relationships** in which PTC system interoperability must be achieved by December 31, 2020, according to current PTCIPs

  - Given that railroads operate on multiple host railroads
  - There are also **dozens of property boundaries** owned by different railroads

- Multiple railroads are implementing the same type of PTC system in different manners (e.g., variances in design, functionality, and operation), requiring gap analyses and configuration management

- Both ACSES II and I-ETMS will be operated **concurrently** on hundreds of route miles

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# *Interoperability Challenges*

## Messages from the Tenant Short Line, Switching, Regional, and Terminal Railroads

- From May through August 2019, FRA leadership met with **67 freight tenant railroads**, most of which had already advanced to the installation or testing phase.

- **Common challenges conveyed by these railroads:**

  o Lengthy and complicated process to negotiate and execute agreements with major PTC system suppliers and vendors;

  o Level of insurance coverage required by a particular supplier;

  o Recurring expenses, including certain annual licensing fees and ongoing operations and maintenance costs; and

  o Several tenant railroads are ready to conduct interoperability testing but report not being able to schedule testing time with their host railroads, given competing priorities.
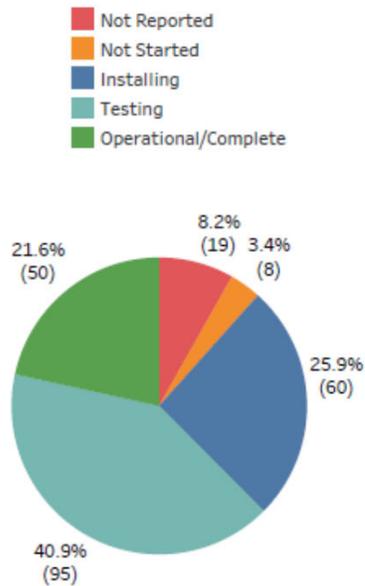
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# *Status of Interoperability*

*As of June 30, 2019*



## Implementation Status on Host Railroad
As reported in Railroads' Q2 2019 Status Reports

Legend:
- Not Reported
- Not Started
- Installing
- Testing
- Operational/Complete

Pie chart values:
- 8.2% (19)
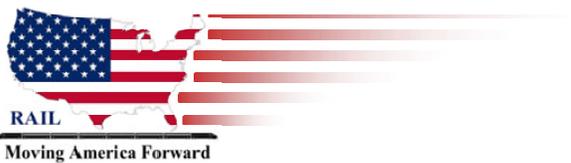- 3.4% (8)
- 25.9% (60)
- 40.9% (95)
- 21.6% (50)

## Expected and Actual Interoperablity Completion Dates
*An expected completion date was not provided for 90 (39%) interoperability relationships in **Railroads' Q2 2019 Status Reports**. Those relationships are counted as "2020 Q4" in this graphic.

Non-Class I, Freight Tenant Railroads

Total Percent Complete

| Quarter | Value |
|---|---|
| 2018 Q4 | 3% |
| 2019 Q1 | 4% |
| 2019 Q2 | 6% |
| 2019 Q3 | 12% |
| 2019 Q4 | 30% |
| 2020 Q1 | 32% |
| 2020 Q2 | 36% |
| 2020 Q3 | 37% |
| 2020 Q4 | 100% |

Line values: 14%, 17%, 22%

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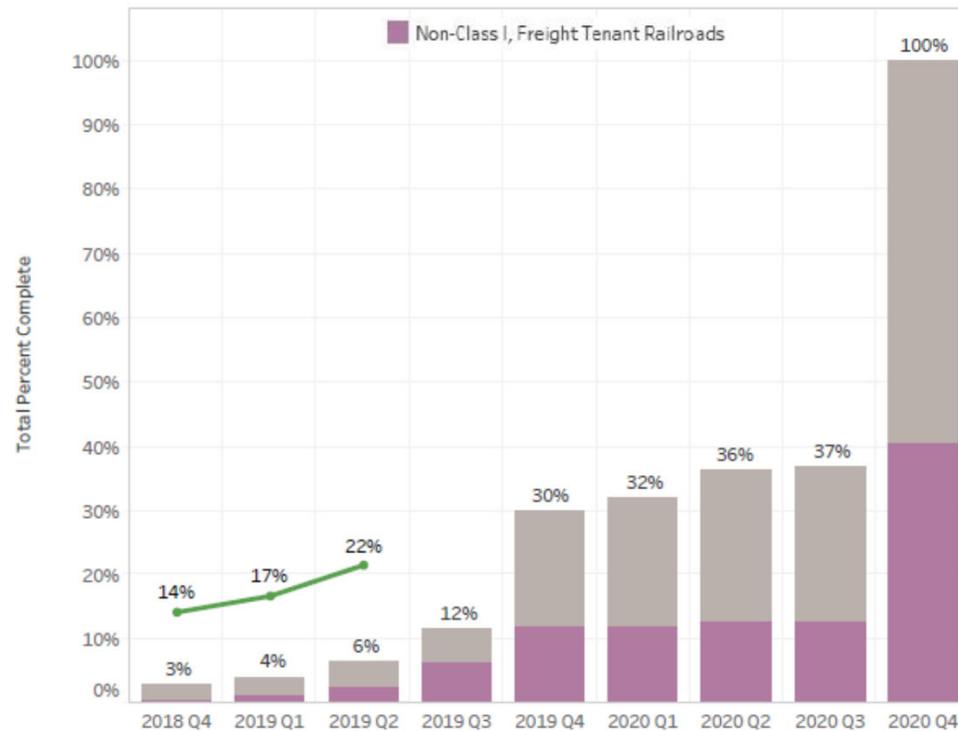
# *Future Updates to Certain Reporting Forms*

# Reporting Progress Toward Full Implementation
### Quarterly and Annual PTC Progress Report Forms
### (FRA F 6180.165 and 6180.166, OMB Control No. 2130-0553)

- OMB's approval of both existing forms expires March 31, 2020.  During the upcoming renewal process, FRA intends to propose that certain sections will be "optional" for *most* railroads, as appropriate.

  - For example, FRA expects to propose making certain aspects in **Section 3** optional, including the tables regarding onboard, wayside, and back office hardware.  That would, however, remain mandatory for the few railroads still in the installation phase.

- Reminder: The statutory *progress-related* reporting requirements will expire one cycle <u>after</u> full implementation of an FRA-certified and interoperable PTC system on a railroad's required main lines.

  - For example, *January 31, 2021*, is the last due date for most railroads' final Quarterly PTC Progress Reports.

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# *Reporting of Various PTC System Failures*

*Slide 1 of 2*

**1. <u>Temporary Statutory Reporting Requirement</u>** – Expires ~December 31, 2021

- Currently in effect for each host railroad and tenant railroad operating an FRA-certified PTC system on *any* main lines

- **Statutory Scope**: the # of failures to initialize, cut outs, and malfunctions, by region

- **FRA will publish a notice in the Federal Register with a proposed alternative reporting frequency and location**, which 49 U.S.C. § 20157(j)(4) authorizes FRA to establish:

    - <u>Proposed Frequency (Instead of Submitting Within 7 Days of Each Occurrence)</u>
        - **During implementation:** Quarterly Reporting (Due End-of-Month Following the Quarter)
        - **Post-full implementation:** Monthly Reporting (Due 15th of the Following Month)

    - <u>Proposed Location (Instead of Submitting to Applicable FRA Region)</u>
        - Centralized reporting to FRA's headquarters, using an electronic form
        - Will propose reporting via host railroad only (instead of each tenant railroad)

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# *Reporting of Various PTC System Failures*

*Slide 2 of 2*

**2. <u>Permanent Annual Reporting Requirement</u>** – 49 CFR § 236.1029(h)

o  Beginning April 16th *after* a railroad fully implements its PTC system, a railroad must submit an **annual report regarding PTC system failures** that occurred during the prior calendar year, with specific information re: locomotive, wayside, communications, and back office system failures.

**3. <u>Note – Other Regulatory Reporting Requirements</u>**

o  Vendors' and Suppliers' Required Notifications to Railroads and FRA – 49 CFR § 236.1023
o  If frequency of safety-relevant hazards exceeds threshold in PTC Safety Plan – § 236.1037(d)

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# *Questions and Suggestions for FRA*