



**Massachusetts Bay  
Transportation Authority**

# Positive Train Control (PTC) Program Update

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Fiscal and Management Control Board

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# Overview

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- This presentation will provide an update regarding the current activities and progress of the MBTA's Positive Train Control (PTC) Program, including implementation of the North Side Automatic Train Control (ATC) system on lines required by the Federal Railroad Administration (FRA).
  - The North Side ATC system implementation is required by the FRA by December 31, 2020 for a fully compliant PTC system.
- Despite the risks described in this update, **the PTC Program remains on schedule.**
  - Siemens/Hitachi Rail hardware and software issues along with Keolis signal resource limitations present a continuing risk to the program that is being closely managed at the executive level.



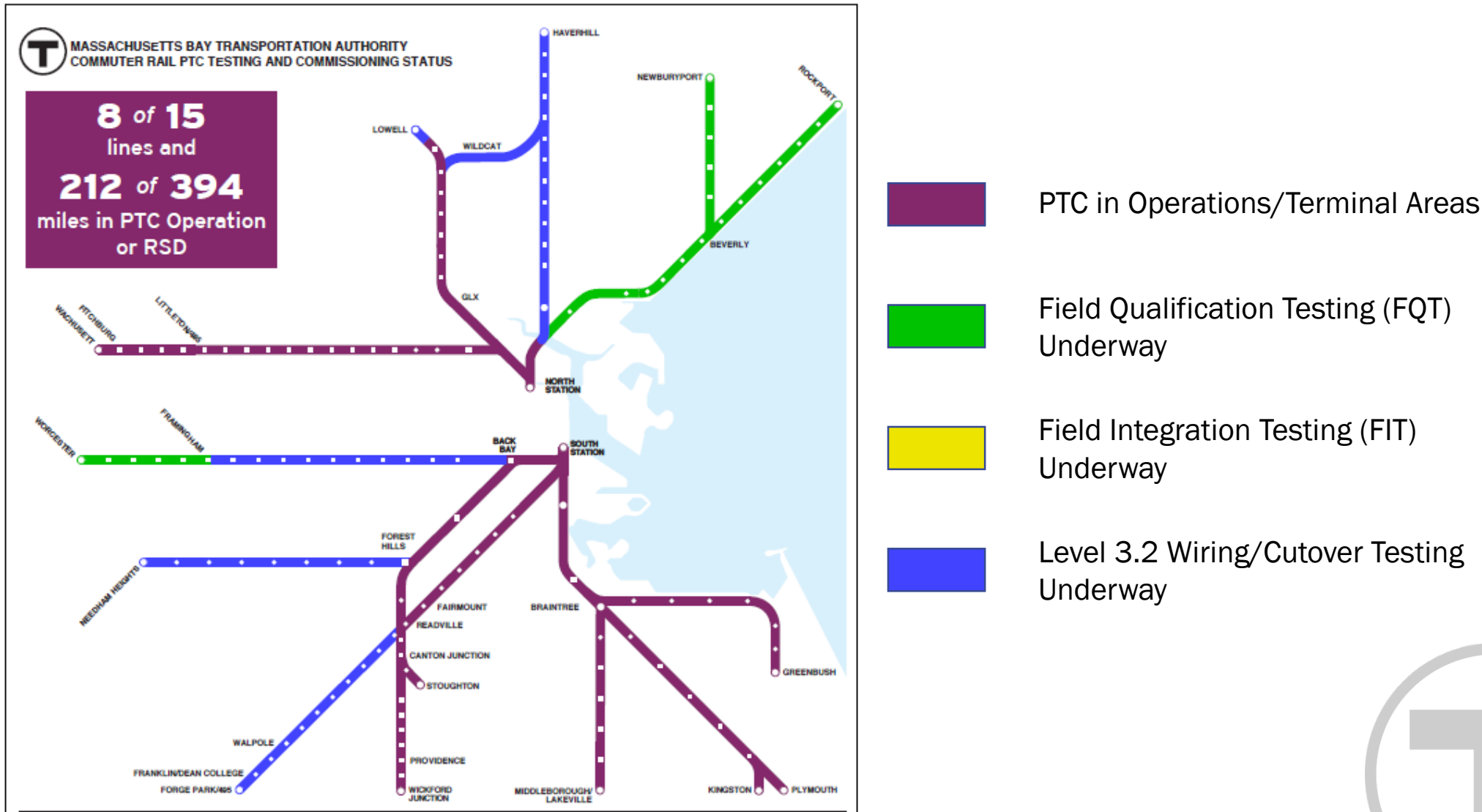
# Current PTC Activities and Progress

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- The North Side Commuter Rail lines entered Extended Revenue Service Demonstration (RSD) on June 16, 2019
  - The FRA approved Extended RSD after the MBTA achieved the required 384 consecutive runs without critical anomalies in RSD on the Lowell pilot line on June 6, 2019
- 8 of the MBTA's 15 commuter rail lines currently have PTC in operation (212 out of 394 route miles)
- Testing is underway on the Worcester, Newburyport, and Rockport lines
- ATC implementation is proceeding on three South Side lines:
  - Needham line testing and commissioning is underway; Saturday diversions extended until November 9<sup>th</sup> due to redesign and rework required to address issues encountered with the interface of the new system to the existing signal, power, and dispatch systems during the testing and validation process
  - Franklin line installation commenced September 7, 2019
  - Worcester line installation scheduled to start November 2, 2019
- PTC Safety Plan submitted to FRA on September 30, 2019 along with request for Safety Certification of the system – FRA conditional approval required by December 31, 2020



# Current PTC Activities and Progress



# Siemens Hardware Issues

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- Siemens, as a subcontractor to Ansaldo STS USA, Inc. (ASTS, now Hitachi Rail), is supplying **transponder reader hardware** that was used to upgrade certain MBTA vehicles under the PTC Program.
  - In February and April 2019, Siemens recalled components of this equipment that could be the cause of transponder reading issues that the MBTA had been investigating.
  - Hitachi Rail and Siemens have completed the repair and reinstallation of the recalled equipment.
  - Keolis is working with Siemens to repair or replace the “legacy” hardware on other MBTA vehicles that were subject to the recall.
  - Transponder reading is now within specification.



# Hitachi Rail Hardware Issues

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- Hitachi Rail manufactured the **transponders** used in the PTC Program.
  - Continued investigation of the transponder reading issue identified a number of transponders contributing to the issue.
  - Hitachi Rail replaced these “problem” transponders, which improved performance.
  - Factory analysis of the removed transponders revealed that an internal component had been damaged during the manufacturing process.
  - Hitachi Rail is further evaluating the issue to determine the extent of the problem and the required mitigation actions.



# Siemens Software Issues

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- Siemens, as a subcontractor to Hitachi Rail, is supplying the Advanced Civil Speed Enforcement System (ACSES) PTC software that is used on all of the MBTA's commuter rail locomotives and coaches.
  - Siemens software updates have been required to correct various functional issues that impact PTC operation on the North Side Commuter Rail lines, in particular due to the lack of ATC on those lines.
  - The first update was implemented in June 2019.
  - The second update will be implemented starting in October 2019.
  - The second update will correct a number of bugs that were introduced in the first update resulting in system performance issues.



# Keolis Support Issues

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- As part of the PTC Program team, Keolis signal forces are responsible for the cutover of PTC and ATC to the live signal system.
  - Keolis' signal resources are limited.
  - The MBTA is closely monitoring Keolis' progress to mitigate delay-causing issues as quickly as possible.
  - Delay to the work on any one line results in delay to the work on the following lines and the subsequent North Side ATC work.
  - Despite the delays that have occurred, the overall PTC Program remains on schedule.





# North Side ATC

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- ATC improves the safety and reliability of the Commuter Rail System and is required for a fully FRA-compliant PTC system.
- The FRA has granted the MBTA a conditional variance to allow our PTC system on the North Side Commuter Rail Lines to operate until ATC is implemented.
- The MBTA must implement ATC on the Lowell and Wildcat lines by December 30, 2020 for the FRA to extend the MBTA variance.
- On June 17, 2019, the FMCB authorized a change order to the PTC contract to implement the North Side ATC system.
- A work directive providing Notice To Proceed (NTP) was issued to Hitachi Rail on June 19, 2019.
- Hitachi Rail has commenced design work and procurement of long lead time materials for the North Side ATC system implementation.



# North Side ATC

