



**Massachusetts Bay
Transportation Authority**

MBTA Contract No. 42-14: Positive Train Control (PTC)

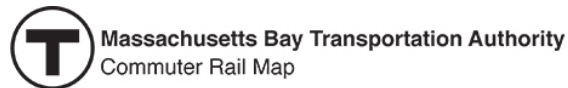
**Change Order: Commuter Rail North Side
Automatic Train Control (ATC)**

June 17, 2019



Overview

Today's board action will authorize the award of a Change Order to the PTC Systems Integrator Contract with Hitachi Rail STS for the installation of Automatic Train Control (ATC) on the MBTA North Side commuter rail lines.



All Commuter Rail stations have parking except: Belmont, Four Corners/Geneva, Mishawum, Morton St., Natick, Newmarket, Newtonville, Prides Crossing, Porter, River Works, Talbot Ave., Uphams Corner, Waverley, W. Newton, Windsor Gardens, Yawkey.





Automatic Train Control (ATC) and Positive Train Control (PTC)

- Automatic Train Control (ATC) is a safety-critical signal system that is an upgrade to the Automatic Block Signal (ABS) system currently in use on North Side Commuter Rail lines
- ATC systems integrate with the train to implement speed control that will gradually slow or stop a train in advance of a required speed reduction or stop
- If ATC detects that a train speed exceeds the maximum speed allowed in a section of track:
 - Engineers will receive target speed indications and audible warnings
 - Brakes will be automatically applied after issuing audible warnings to bring the train to its target speed
- Per FRA, PTC in an integrated system consisting of ATC with an ACSES (Advanced Civil Speed Enforcement System) overlay



Automatic Train Control (ATC) Benefits

- The MBTA has determined that the installation of wayside Automatic Train Control (ATC) systems on its North Side is a critical need which will provide significant benefits:
 - Allow MBTA to operate its Commuter Rail system as a single network, eliminating separate North and South Side operations which currently are different
 - Improve train traffic management and realize service and operating efficiencies
 - Enhance Safety
- ATC Systems will be installed on the Lowell (NHML), Wildcat (WC), Fitchburg, Haverhill (Western), Newburyport, and Rockport (Eastern)
 - Currently the PTC Program is installing ATC on the three remaining lines on the South Side that are not ATC equipped



ATC System Performance Metrics:

The ATC System will further improve safety and reliability of the Commuter Rail system.

Measurable benefits include:

- **Enhanced safety:** the element of human error is over-ridden; automatic control of the train will limit, slow, or stop the train to enforce and increase safety; train operating speeds cannot be exceeded
- **Improved reliability:** travel time will be far more consistent on every run
- **Shorter headways:** improved signal system capacity with ATC allows trains to run closer at higher speeds
- Central dispatching office will have **precise train location data**
- **Lower fuel consumption** is possible as the operation becomes more efficient



Regulatory Schedule and Implementation Approach

- FRA granted the MBTA conditional approval of a variance to the ACSES PTC system that would allow train service on the North Side to continue to operate as it does today after PTC implementation
- The FRA variance is approved through December 31, 2020, at which time the FRA reserves the right to extend the variance if “circumstances warrant.”
- The MBTA expects to request an extension to the variance, consistent with the following ATC implementation schedule:
 - NHML and Wildcat: December 2020
 - Fitchburg: December 2021
 - Eastern & Western Lines: December 2022
- The Commuter Rail North Side ATC Program is included in the FY19–FY23 Capital Improvement Program (CIP) as part of the Commuter Rail Safety and Resiliency Program
- The MBTA intends to execute a Change Order with HR STS to expedite the implementation of the ATC system on the North Side



Hitachi Rail STS (HRSTS) System Integrator

- HRSTS has significant design and technical experience supporting the MBTA's PTC Program (which includes the design, installation, and commissioning of ATC on three South Side Lines).
- HRSTS understands its role on the MBTA Program Team as the System Integrator and will provide a highly-qualified, experienced project team to execute the technical specifications and ensure the system is implemented as designed.
- A Sole Source Determination has been developed and approved to advance the work as a Change Order to the PTC System Integrator Contract.
- The Commuter Rail North Side ATC work is recommended to be awarded as a Change Order to the PTC contract (42-14). The term is June 2019 through December 2022.



Request of the Fiscal and Management Control Board

Staff request that the Fiscal and Management Control Board authorize the General Manager, or his designee, to award and execute the Change Order with Hitachi Rail STS (HRSTS) for installation of Automatic Train Control on the MBTA's five (5) North Side Lines for an amount not to exceed \$253,000,000.