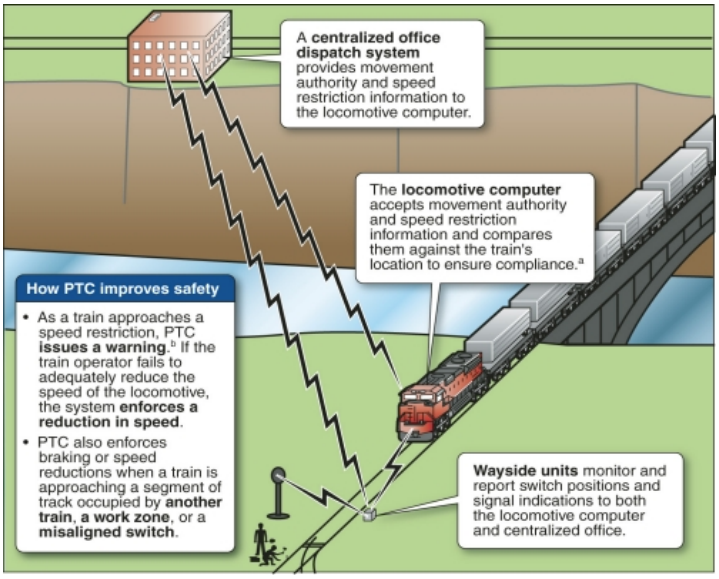
Positive Train Control

POSITIVE TRAIN CONTROL

Positive Train Control (PTC) is a computerized system that prevents certain types of train-to-train collisions, helps avoid derailments and other accidents caused by excessive speed and increases safety for railroad workers. The system integrates GPS, wayside sensors and communications units with Metra's centralized office dispatching system. Together, these components track trains, convey operating instructions and monitor the crew's compliance with speed restrictions and signals. PTC will automatically stop a train if the system detects that a violation or equipment failure is about to occur.



IMPLEMENTATION TIMELINE

The 2008 Rail Safety Improvement Act required implementation of PTC by the end of 2015 on all passenger rail routes and on freight lines carrying certain hazardous materials. In the fall of 2015, new legislation was passed that extended the deadline for installation of PTC to 2018 but also allowed up to two additional years to finalize implementation and testing of PTC provided the railroads file an alternative schedule and meet specific benchmarks.

In January 2016, Metra filed an alternative schedule for implementing PTC by 2020.

KEY MILESTONES

In October 2018, Metra completed the benchmarks required for an alternative schedule:

- Installed all PTC equipment
- Acquired all necessary radio spectrum
- Trained all necessary personnel
- Initiated revenue service PTC demonstration on one line (Rock Island).

PTC AND FUNDING

Nationally, the cost to carry out the PTC mandate is estimated to exceed $10 billion, including $3.48 billion for commuter railroads. PTC implementation is expected to cost Metra between $350 million and $400 million.

To date, Metra has spent $244.3 million in capital funding on PTC. Metra has received two federal PTC grants totaling about $43 million but has had to cover the rest out of its already inadequate capital funding sources.

IMPLEMENTATION PLAN

Metra is responsible for installing PTC on all trains and along the five lines it controls – Metra Electric, Milwaukee District North, Milwaukee District West, Rock Island and SouthWest Service.

PTC components have been installed on 154 Metra locomotives and switch engines, 187 cab cars used on our diesel lines and 26 Highliner cars used on the Metra Electric. The 160 new Highliners that were recently delivered to Metra are already PTC-compliant. Wayside towers have been installed at 219 locations to communicate with Metra rolling stock and with Metra's centralized office dispatching system.

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For the six other Metra lines owned by private railroads – BNSF, Union Pacific and CN – Metra is contributing a share of PTC installation costs.

Below is our anticipated schedule for PTC installation. Revenue Service Demonstration (RSD) means some trains are operating with PTC and gradually all trains will be.

Line	Date
BNSF	Done
Rock Island	In RSD
UP lines	In RSD
SouthWest Service	2Q 2019
Metra Electric	4Q 2019
Milwaukee West	4Q 2019
Milwaukee North	2Q 2020
Heritage Corridor*	2020
North Central Service*	2020

*Schedule dependent on CN

KEY CHALLENGES

The efforts of Metra and other railroads working to implement PTC have been affected by a number of challenges, including:

- Expense: PTC implementation is expected to cost Metra $350 million to $400 million, equal to the amount of federal funding Metra receives every 2½ years. And, PTC is expected to add $15 million to $20 million a year to Metra's operating costs.
- Interoperability: PTC systems adopted by various railroads must be able to communicate with each other so that trains can move seamlessly between tracks controlled by different systems. Achieving PTC interoperability in Chicago will be especially complicated, since the region has the most complex railroad network in the country.
- Technology availability: PTC technology had to be developed, so off-the-shelf systems could not be purchased and certain components were not immediately available.
- Bandwidth availability: To support PTC-related transmissions, railroads must secure sufficient radio spectrum bandwidth from existing license holders.

Once PTC is installed, our system will be in full compliance with the federal mandate and feature the latest, state-of-the-art technology to ensure the safety of our passengers.