

# SEPTA's Positive Train Control Project

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# SEPTA's Positive Train Control Project

## Overview

Southeastern Pennsylvania Transportation Authority (SEPTA).

Sixth largest public transportation system in the US.

Provides Commuter Rail service to Southeastern Pennsylvania, northern New Jersey and northern Delaware.

Serves an average yearly ridership of 35.4 million riders.

Fully multi-modal operations with Commuter Rail, Subway, Elevated, Light Rail and bus operations.



# SEPTA's Positive Train Control Project

## SEPTA Positive Train Control

PTC system based on Amtrak's Advanced Civil Speed Enforcement System, (ACSES).

ACSES requires an underlying Automatic Train Control system.

83% of the railroad is provided with ATC.

End of 2015 all Lines will be fully outfitted.

SEPTA's PTC system will also be fully interoperable with our I-ETMS tenants.



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## Operations

SEPTA is a tenant carrier to Amtrak on the Northeast Corridor, and to CSX on the CSX Trenton Subdivision.

Norfolk Southern, CSX and Conrail Shared Asset's are tenants on SEPTA.

Short Line tenants include West Chester-Four States, Pennsylvania Northeast and New Hope and Ivyland Railroad.



# SEPTA's Positive Train Control Project

SEPTA's PTC system will require the following major operating systems to be significantly modified:

- Wayside Signaling Systems
- Vehicle Control Systems
- Computer Aided Dispatch Systems
- Communication Systems



# SEPTA's Positive Train Control Project

## Wayside Signaling Systems

There are over 220 track\miles required to be outfitted with PTC on the SEPTA Railroad.

Over 1400 transponders, ½ mile markers, and 48 antenna poles and Radio Instrument Houses will need to be installed in and along the Right-Of-Way.

52 remotely controlled Interlocking's and two Control Points will need to be rewired to install new PTC equipment.



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## Vehicle Systems

The rolling stock consists of General Electric's Silverliner IV's and new Rotem Silver V's. There are also a number of Bombardier and Comet push-pulls plus a number of diesels and work equipment cab cars.

Traction power system is 13Kv, 25Hz.

Over 288 units, employing 14 different PTC equipment configurations.

Includes installing new PTC and upgraded ATC systems.

A decorative graphic in the bottom-left corner consisting of numerous thin, colorful sticks or lines radiating outwards, resembling a stylized burst or a collection of data points. The colors include red, blue, green, yellow, and purple.

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## Computer Aided Dispatch Systems

All interlocking's and CP's are remotely controlled from the 1234 Market St., Railroad Operations Control Center (ROCC) and the Emergency Back-Up Control Centers (EBCC).

The existing CAD system will have both hardware and software modified / replaced to accommodate the new PTC functionality.

Safety Servers, communications managers, network security and IETMS interface systems will need to be added.





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## Communications Systems - Landline

75% of landline employ fiber optic cables with OTN multiplexers.

All PTC locations interconnected by fiber by 2015.

Install new PTC Ground Based Network in a flat ring configuration using RuggedCom routers and existing dark fiber strands.

The new GBN will connect the OCC devices to the new Radio Instrument Houses.



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## Communications Systems - Radio

Licensed two (2) 50 KHz blocks of spectrum in the 220-222 MHz frequency band.

Obtained FCC Approval to split spectrum into 8, 12.5Khz channels.

Data communications between wayside and motive power.

Coverage maps, frequency re-use plans, communications manager designs and field testing demonstrated that the 8 channels and a 48 TDMA time slot configuration could accommodate all of SEPTA's operations with one channel to spare.

# SEPTA's Positive Train Control Project

## The PM Numbers

SEPTA's PTC Project Schedule is 42 pages long with 50 activities per page.

All told, 1698 separate activities have had to be completed since NTP to meet the Implementation Date.

1.2 activities completed each day since the NTP.

There is no float in the schedule.



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So where are we?

Wayside design ~25% complete.

Vehicle design ~20% complete, prototyping towards “kitting” to be completed by 8/13.

Communications design ~20% complete.

OCC design ~25% complete.

Wayside installation ~5% complete.



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So what does it mean?

It means we estimate that we are approx. 25% complete.

BUT....

There are many things that hold the potential to knock our schedule off track.



# SEPTA's Positive Train Control Project

Like..

New Technology

Vendor Deliveries

Interoperability Issues

Employee Retirements / Employee Qualifications



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Questions?

