



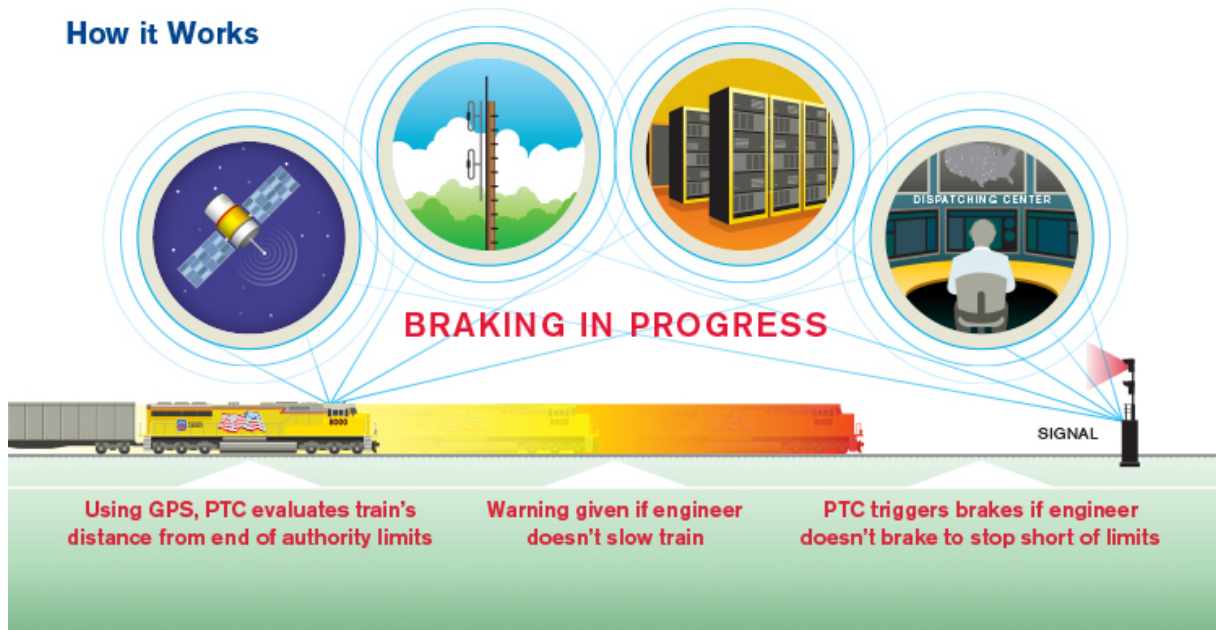
Positive Train Control – June 28, 2018

 **SOUNDTRANSIT**

PTC Overview

Positive train control uses GPS, radio communications, and onboard and wayside computer equipment to enforce speed limits and authority limits should the operating engineer fail to take appropriate action under the prevailing conditions

How it Works



Status Overview

Sound Transit began operating some Sounder services under PTC in the summer of 2017

The statutory deadline of December 31, 2018 requires commuter operators to have all equipment installed, spectrum acquired, personnel trained and one segment in revenue service.

Although the statute allows rail operators who meet the 2018 requirements until December 2020 to complete their implementation, Sound Transit will complete PTC implementation this year.

Our strong partnership with BNSF and their commitment to PTC has been key to completing our implementation in advance of the mandated deadline.

PTC History

September 2008 – Following the Chatsworth collision in California, Congress passed a bill requiring PTC on most freight and passenger lines by December 2015

While some railroads made progress on PTC, many did not due to the complex nature of the system and its high cost

October 2015 – Congress extended the PTC deadline to December 31, 2018, with possible extensions to December 31, 2020 if certain conditions are met

What Does PTC Do?

PTC is specified by the Federal Railroad Administration to functionally and reliably:

- Prevent train to train collisions
- Prevent overspeed derailments
- Prevent incursion into an established work zone
- Prevent movement through a mainline switch in the improper position
- Provide warning and enforcement in the event of grade crossing equipment failure (requires intervention by dispatcher)

What PTC does not do

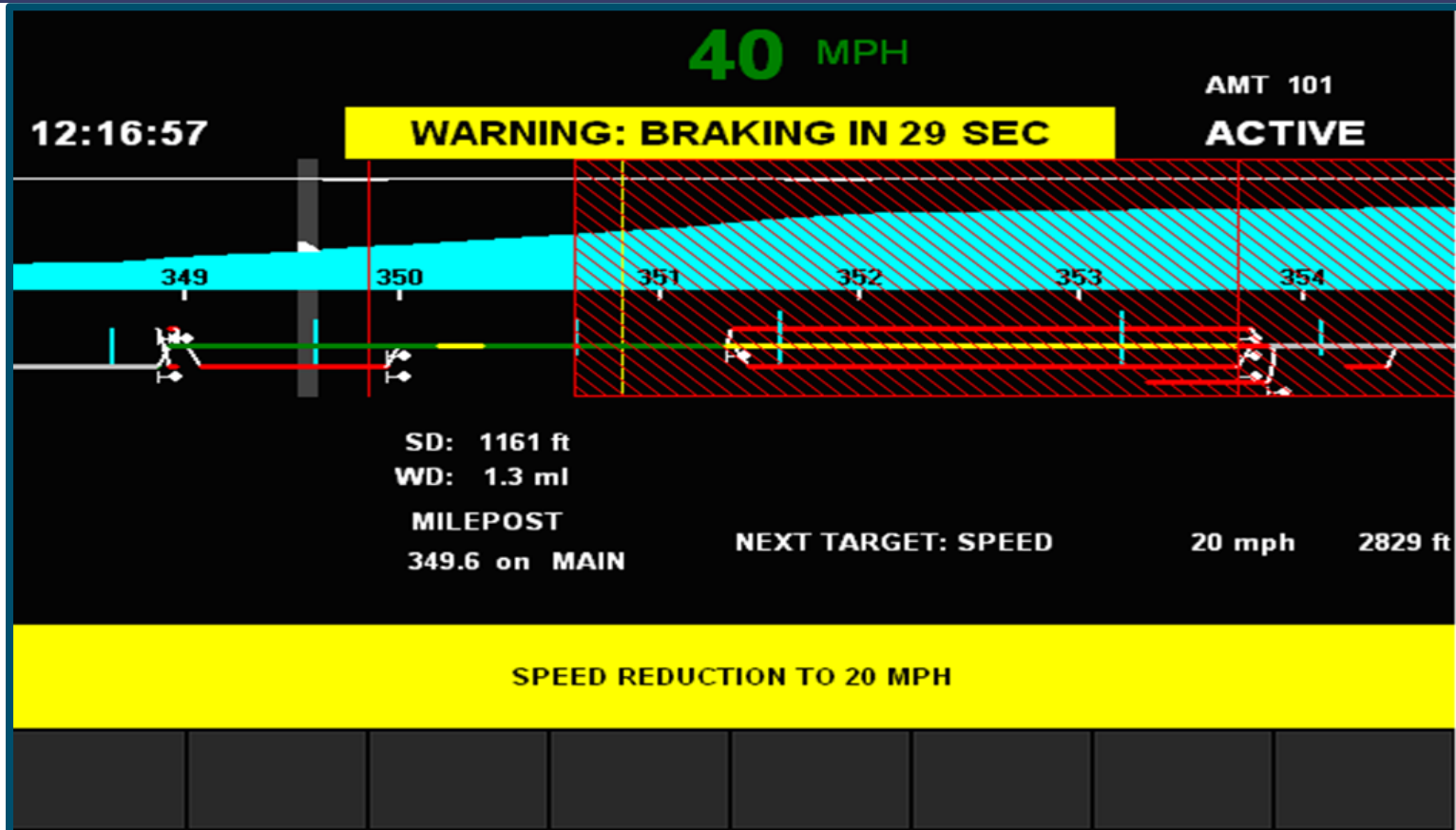
PTC is not designed to prevent:

- Accidents resulting from vehicle mechanical or electrical failures
- Accidents resulting from defective track or signaling equipment
- Grade crossing accidents
- Trespassing Incidents

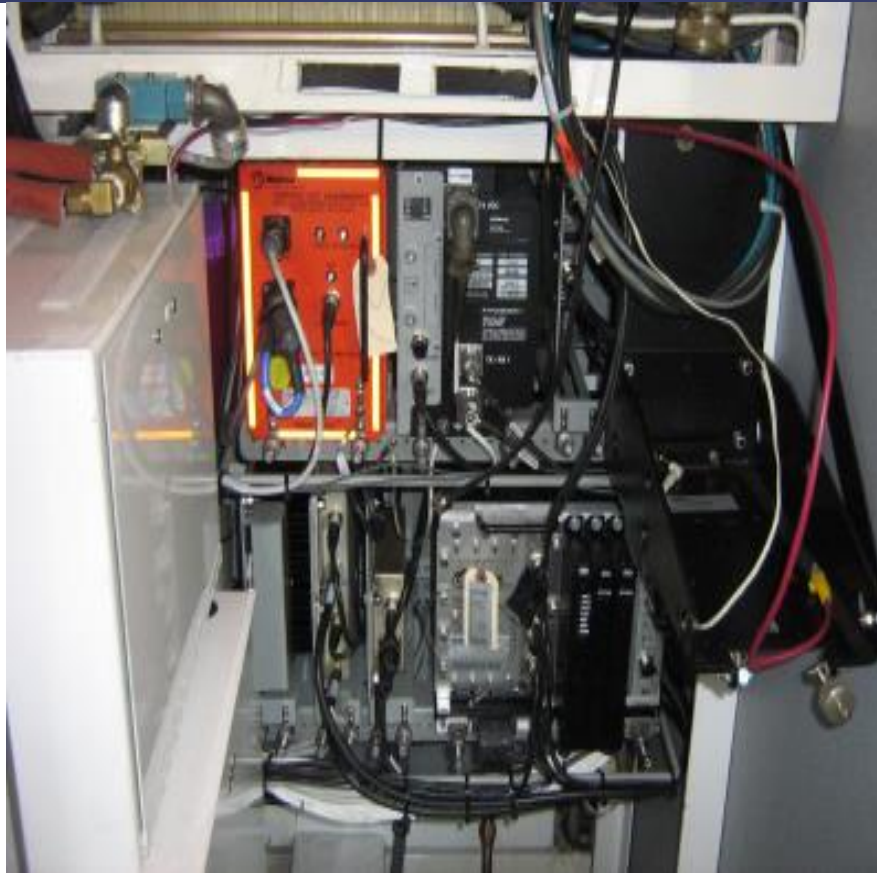
Wayside Equipment



Onboard Equipment



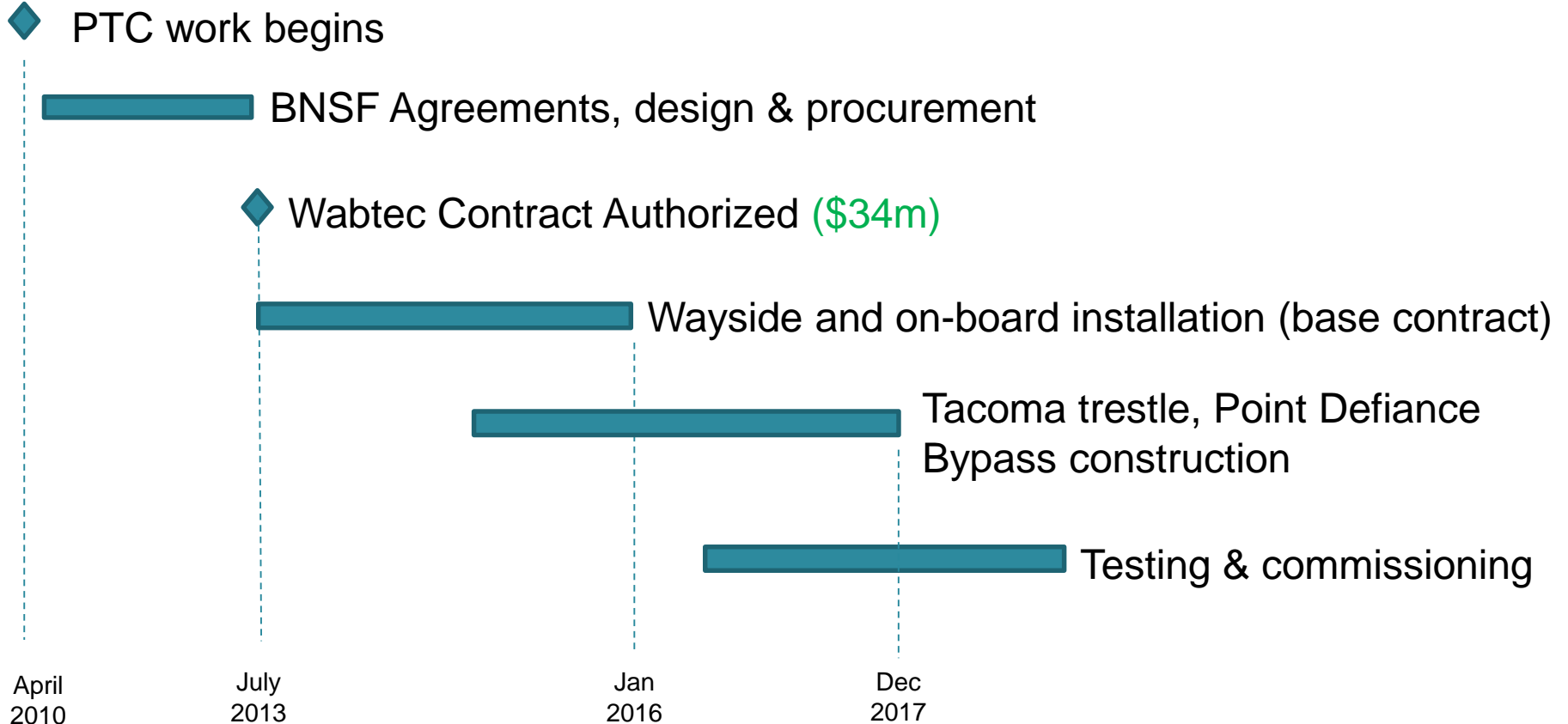
Onboard Equipment



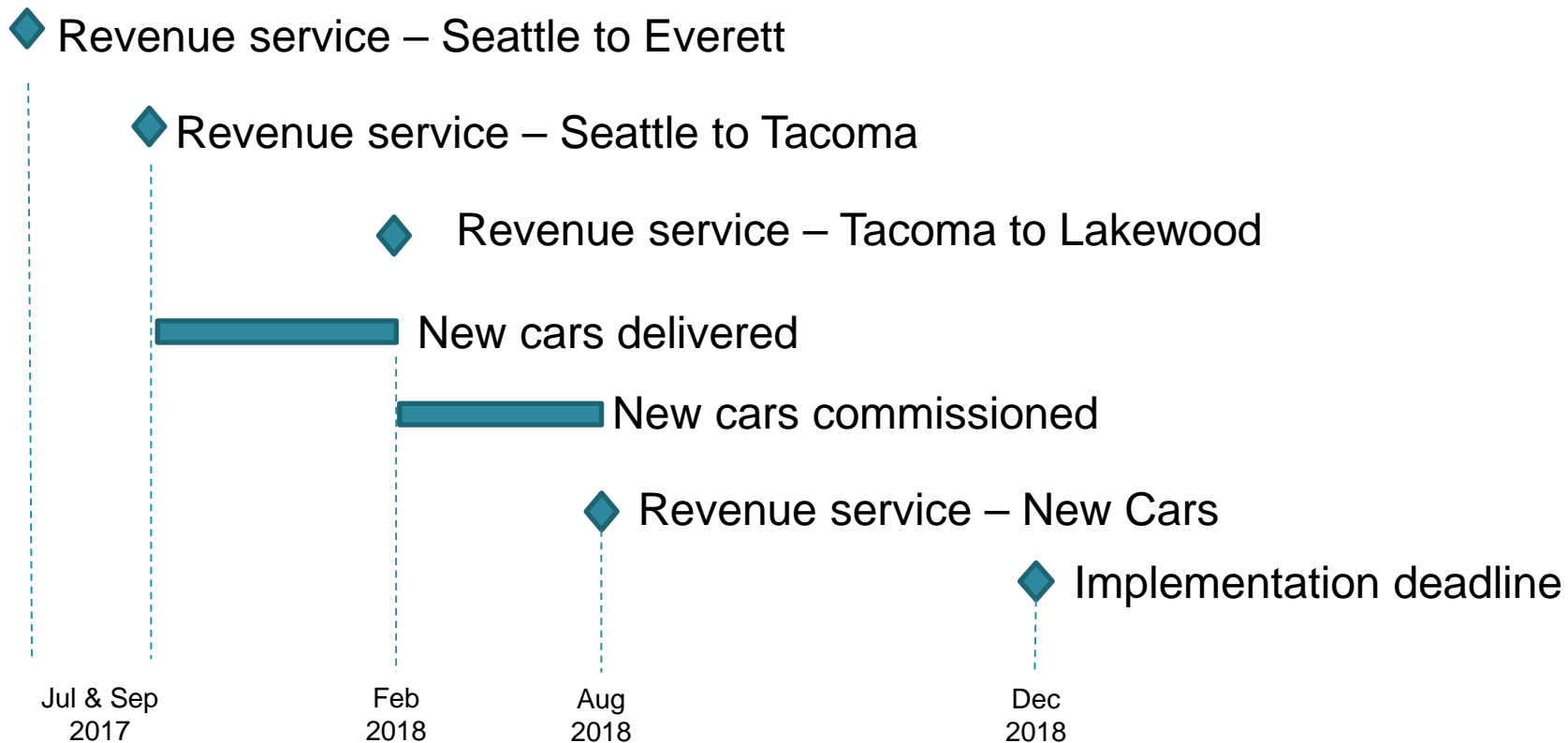
PTC Partners

- Host Railroad
 - BNSF Railway Co.
- Tenant Railroads
 - Sounder
 - Tacoma Rail
 - AMTRAK
- Government Agencies
 - FRA
 - Washington State Department of Transportation

Sound Transit's PTC History



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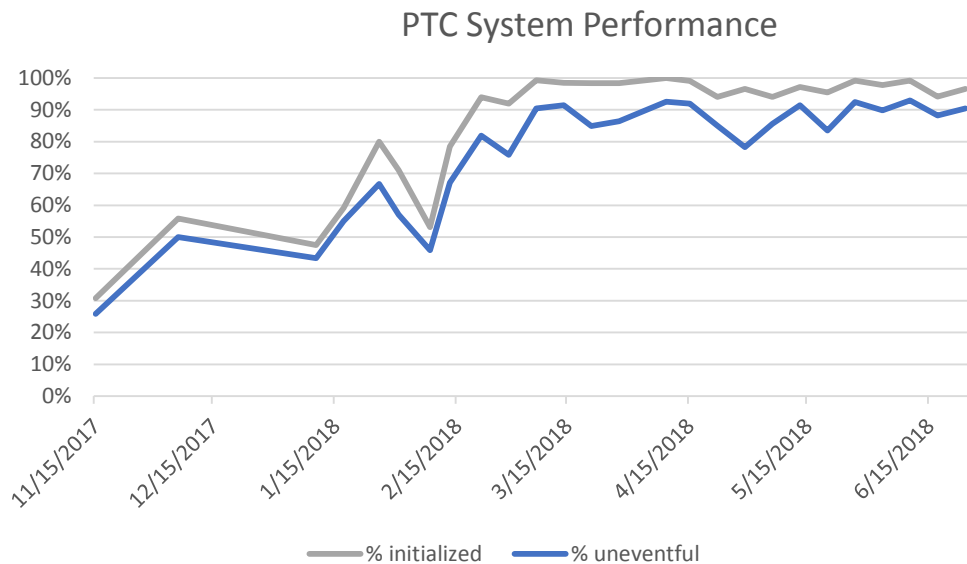


PTC implementation status – remaining work

Remaining activities:

- Complete new cab car commissioning – August 2018
- Place new cars in PTC revenue service – August 2018
- PTC Implementation Plan Request For Amendment – Submitted, under FRA review
- Tacoma Rail, AMTRAK / WSDOT interoperability – December 2018

PTC implementation - performance



An “uneventful” trip is one where there are no system malfunctions and no braking events

PTC Implementation Challenges

Improving reliability:

- False braking events – software fix, next release early August
- GPS antenna reliability – fleet-wide antenna replacement
- 300 series cab car initialization problem

Interoperability

- AMTRAK / WSDOT
- Tacoma Rail

Conclusion

- Sound Transit will complete PTC implementation by December 31, 2018
- In order to realize all the benefits of PTC, all railroad carriers in a given territory need to operate under PTC
- Tacoma Rail and AMTRAK report continuing work on PTC implementation
- PTC is a complex system in the early stages of deployment – reliability will improve with time

