

UNION PACIFIC'S DECEMBER 2019 Positive Train Control Update



Union Pacific installed and implemented Positive Train Control (PTC) on 100 percent of required rail lines, including required passenger train routes. This means almost all Union Pacific trains operating on PTC-mandated rail lines are operating with PTC locomotives. Its interoperability efforts with other railroads will continue through 2020.

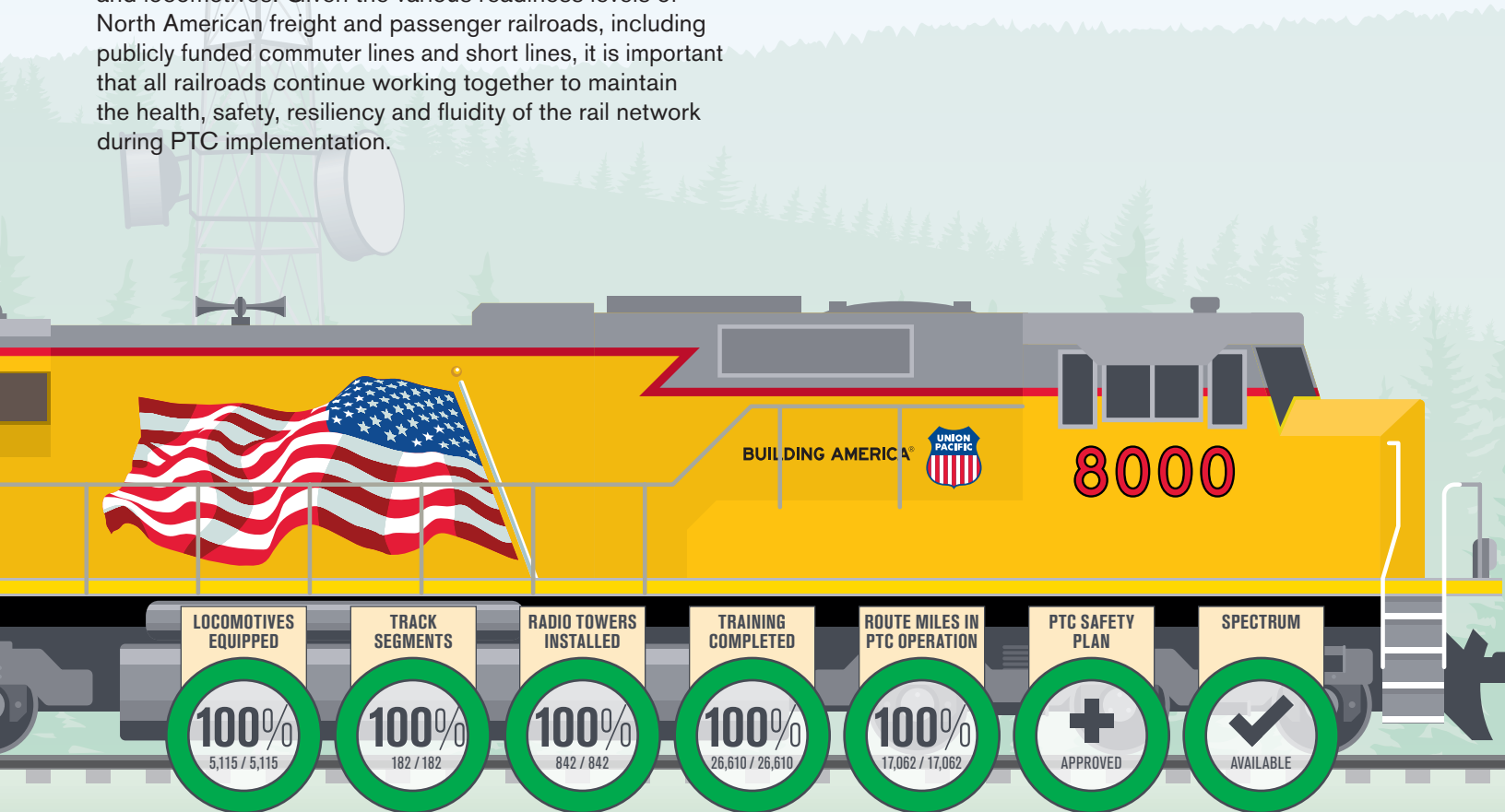
Union Pacific currently hosts 25 freight and passenger railroads, which must achieve PTC interoperability by December 2020. Sixteen of these railroads are already compliant, encompassing 85% of Union Pacific's interoperable PTC train miles. While Union Pacific's infrastructure is PTC-ready, we are working to be PTC-interoperable with the remaining partner railroads. Our expectation is that they will take necessary steps to reach interoperability on our network by mid 2020.

One of the most challenging parts of PTC implementation is ensuring system interoperability among all U.S. rail lines and locomotives. Given the various readiness levels of North American freight and passenger railroads, including publicly funded commuter lines and short lines, it is important that all railroads continue working together to maintain the health, safety, resiliency and fluidity of the rail network during PTC implementation.

PTC Operation Status

With the FRA's conditional approval of Union Pacific's PTC safety plan on April 26, 2017, Union Pacific is running PTC operations in Arizona, Arkansas, California, Colorado, Idaho, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, Tennessee, Texas, Utah, Washington, Wisconsin and Wyoming.

Union Pacific completed required employee training for 26,610 employees or 100 percent. PTC education is ongoing as we retrain employees and introduce the system to new employees. Training materials are tailored to a variety of employee roles, including engineers, conductors, dispatchers, maintenance of way/engineering, mechanical, signal, telecom and information technologies.



With the FRA's conditional approval of our PTC safety plan on April 26, 2017, Union Pacific is running PTC operations on more than 17,000 miles in Arizona, Arkansas, California, Colorado, Idaho, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, Tennessee, Texas, Utah, Washington, Wisconsin and Wyoming.

WHAT PTC DOES PREVENT:

- ✓ Train-to-train collisions
- ✓ Derailments caused by excessive train speed
- ✓ Train movements through misaligned track switches
- ✓ Unauthorized train entry into work zones

WHAT PTC DOES NOT PREVENT:

- ✗ Vehicle-train accidents at railroad crossings
- ✗ Train accidents involving pedestrians on the track
- ✗ Incidents due to railroad track malfunction
- ✗ Incidents due to equipment malfunction



— Implemented
— PTC Not Required
..... Haulage or Trackage Rights