

UNION PACIFIC'S FOURTH QUARTER 2018 Positive Train Control Update



Positive Train Control (PTC) is installed on 100 percent of required rail lines and implemented on required passenger train routes. Implementation efforts continue to ensure PTC interoperability with other freight and passenger railroads operating on our tracks by 2020, as allowed by federal law.

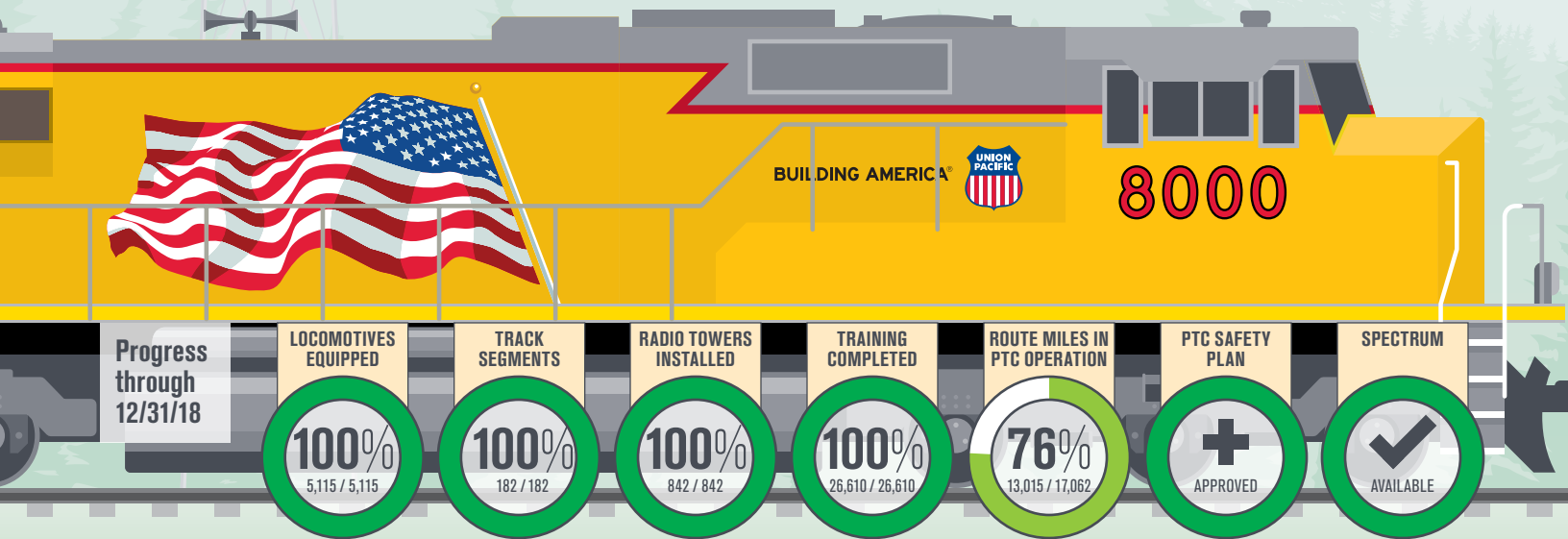
One of the most challenging parts of PTC implementation is ensuring system interoperability among all U.S. rail lines and locomotives. Given the various readiness levels of North American freight and passenger railroads, including publicly funded commuter lines and short lines, it is important that all 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 on more than 13,000 miles in Arizona, Arkansas, California, Colorado, Idaho, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Nevada, New Mexico, Oregon, Tennessee, Texas, Utah, Washington, Wisconsin and Wyoming. Union Pacific and freight and passenger railroads continue working together to safely implement PTC on the remaining 4,000 required route miles.

Union Pacific's fourth quarter 2018 accomplishments, between October 1, 2018, and December 21, 2018, included:

- Educating 606 employees on PTC operations, bringing the total number of required trained employees to 26,610 or 100 percent. PTC education is ongoing as Union Pacific retrains employees and introduces 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.
- Increasing by approximately 1,095 the number of implemented PTC route miles, bringing the total number of route miles in PTC operations to 13,015 or 76 percent. Four out of five passenger rail carriers are currently operating PTC-equipped trains over Union Pacific lines.



With the FRA's conditional approval of our PTC safety plan on April 26, 2017, Union Pacific is running PTC operations on over 13,000 miles in Arizona, Arkansas, California, Colorado, Idaho, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Nevada, New Mexico, 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

