

UNION PACIFIC'S SECOND QUARTER 2019 Positive Train Control Update



Union Pacific installed Positive Train Control (PTC) on 100 percent of required rail lines and implemented 86 percent of required lines, including all 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. Four out of five passenger rail carriers are currently operating PTC-equipped trains over Union Pacific lines.

PTC Operation Status

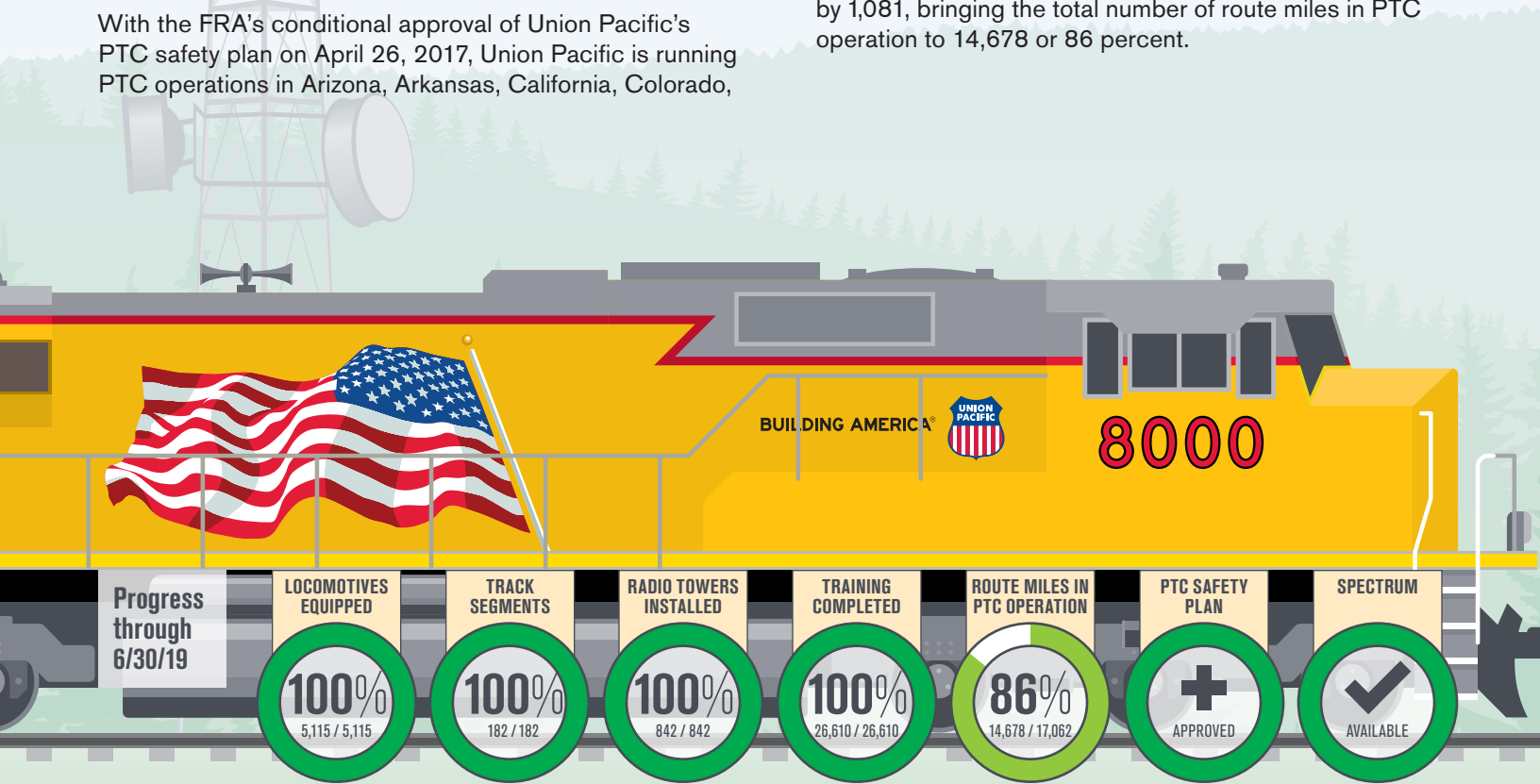
With the FRA's conditional approval of Union Pacific's PTC safety plan on April 26, 2017, Union Pacific is running PTC operations in Arizona, Arkansas, California, Colorado,

Idaho, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, Tennessee, Texas, Utah, Washington, Wisconsin and Wyoming. Union Pacific and freight and passenger railroads continue working together to safely implement PTC on the remaining 2,384 required route miles.

As reported in the fourth quarter 2018 update, 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.

Union Pacific's second quarter 2019 accomplishments between March 31, 2019, and June 30, 2019, included:

- Increasing the number of implemented PTC route miles by 1,081, bringing the total number of route miles in PTC operation to 14,678 or 86 percent.



With the FRA's conditional approval of our PTC safety plan on April 26, 2017, Union Pacific is running PTC operations on nearly 15,000 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

