Will New Train Guidelines Improve Speeds? Not So Fast; Rules allow travel up to 220 mph, but no U.S. tracks can handle it

Jo Craven McGinty . Wall Street Journal (Online) ; New York, N.Y. [New York, N.Y]11 Jan 2019: n/a.

FULL TEXT

The fastest trains in the U.S. are about to get faster.

Beginning this month, the government will allow railroads to operate passenger trains capable of traveling up to 220 mph.

There's just one catch: No U.S. track can handle that much speed.

Whenthe Federal Railroad Administration rule --which introduces new safety and high-speed standards--goes into effect on Jan. 22, the maximum speed of Amtrak's Acela Express, currently the nation's fastest train, will bump up to 160 mph from 150 mph. That might shave a few minutes off some trips--the Acela can travel at its fastest in only two spots along the Northeast Corridor--but the promise of greater speed lies ahead.

With infrastructure improvements,the top speed in the Northeast Corridor could increase to 186 mph. California is in the midst ofa high-speed project to connect eight of its 10 largest cities. And Texas developers are acquiring land for high-speed rail between Dallas and Houston.

The California and Texas projects would send trains barreling down the tracks at 200 mph or more, but with their completion in the distance, the more immediate beneficiaries of the FRA rule may be the country's slower railroads. They'll be able to take advantage of contemporary designs that contribute to lighter, more energy-efficient trains, which over time are expected to reduce infrastructure maintenance costs.

"It's like heavier trucks versus lighter trucks on the highway," said Scott Sherin, vice president of marketing and strategy for Alstom Transportation Inc., a French manufacturer that isbuilding 28 high-speed trains for Amtrak . "Lighter vehicles do less damage."

Before the new rule, there were two tiers of commuter and intercity trains in the U.S.

Tier I trains operate at up to 125 mph--although most don't go that fast--and include the bulk of the 8,000 rail cars and locomotives used by the country's 30 commuter railroads.

"I can count on my hand the number that go about 100 mph," said Narayana Sundaram, senior director of engineering at the American Public Transportation Association. Systems that reach such speeds, he said, include New Jersey Transit, Pennsylvania's SEPTA and Maryland's MARC.

Tier II trains traditionally operate at up to 150 mph and include the 20 Acela trains running between Boston and Washington, D.C.

Tier III trains are a new designation. In rights-of-way shared with slower passenger and freight trains, these high-speed trains will operate at no more than 125 mph. In the Northeast Corridor, they will run up to 160 mph. And in dedicated tracks with no grade crossings, they may operate at up to 220 mph.

Previously, crash worthiness protocols for conventional U.S. trains were written for individual cars, which, among other tests, had to withstand 800,000 pounds of static force delivered to the front of the car.

"It was strength based," said Eloy Martinez, a senior vehicle consultant with LTK Engineering Services, which specializes in rail vehicles and systems. "That would result in pretty heavy cars that were very rigid with lots of steel."

There is no specific weight requirement, but maximum axle loads offer some idea of how trains manufactured to different specifications compare.
"If you look at the existing Acela, which is the closest thing we have to high-speed trains in the U.S., it is 23 metric tons per axle," Mr. Sherin said. "Tier III specifications provide for 17 metric tons per axle."
U.S. freight trains, on the other hand, typically have a maximum axle load of 36 metric tons, according to Christopher Barkan, professor and executive director of the Rail Transportation and Engineering Center at the University of Illinois at Urbana-Champaign.
Because lighter passenger trains can collide with heavy freight trains on shared tracks, the goal of the previous crash standards was to build passenger cars that could withstand the impact.
The new rule permits fixed train sets that treat groups of rail cars as a unit. The cars in a fixed set are always in the same position, and, like modern automobiles, the unit is designed with crumple zones.
"The crash energy management we'll be using in the U.S. is the same as what's used globally," Mr. Sherin said. "The big one is in the front of the train. You have a module that sits in the nose. When it hits an object, it collapses into itself in stages to absorb that energy, almost like a shock absorber."
The ability to disperse the energy of a collision allows for less beefy trains that still protect occupants. And relying on designs used elsewhere in the world has another benefit.
"We won't be able to pick up a train from France and drop it on a track in the U.S.," Mr. Sherin said, "but we will be able to take existing designs and make far fewer modifications."
That alone is enough to get the industry's engines revving.

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DETAILS

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