



Rail





EXECUTIVE SUMMARY

Our nation’s rail network is divided into two categories: freight rail and passenger rail. Approximately 140,000 rail miles are operated by freight’s Class I, II, and III railroads. Amtrak operates over a 21,400-mile network, 70% of which is owned by other railroads, also known as host track. Despite freight and passenger rail being part of an integrated system, there remain stark differences in the challenges faced by the two rail categories. While freight maintains a strong network largely through direct shipper fees – investing on average over \$260,000 per mile – passenger rail requires government investment and has been plagued by a lack of federal support, leading to a current state of good repair backlog at \$45.2 billion. Along our nation’s busiest passenger rail corridor, the Northeast Corridor, infrastructure-related issues caused 328,000 train-delay minutes, or the equivalent of roughly 700 Northeast Regional train trips from Boston, Massachusetts, to Washington, D.C.

CONDITION & CAPACITY

Approximately 140,000 rail miles are operated by Class I, II, and III freight railroads.¹ Amtrak, the national intercity passenger carrier, operates over a 21,400-mile network. Approximately 70% of the 21,400 miles traveled by Amtrak trains are over tracks owned by other railroads.²

Freight Rail

Freight rail is divided into three classifications based on yearly earnings and service distance.³

Freight Rail Classification	Number of Lines	Operating Revenues
Class I	7	At least \$490 million ⁴
Class II	22	Between \$39.1 and \$489.9 million
Class III	584	\$39.1 million or less



Photo courtesy of Amtrak

According to the American Association of Railroads, from 2017 to 2019, Class I capital expenditures — including track, structures, and equipment — totaled

\$38.3 billion over 198,554 operating track miles. Included below is the latest operating data from the top four Class I railroads:⁵

Top 4 Class I Railroads	Road Operating Miles	Billions of Revenue Ton-Miles	Operating Revenue
BNSF Railroad	32,445	702	\$23.4 Billion
Union Pacific (UP)	32,236	474	\$22.8 Billion
CSX Transportation	20,602	209	\$11.9 Billion
Norfolk Southern (NS)	19,420	207	\$11.4 Billion

Class II and III serve in partnerships with Class I railroads to provide first and last mile service and delivery. Short line and regional railroads (Classes II and III) in 2017 operated in 49 states over 47,500 miles of track, or 29% of the national rail network. The short line industry reports a \$10 billion shortfall for state of good repair projects needed to retain strong connection to the Class I network.⁶

According to the U.S. Department of Transportation’s (DOT) Bureau of Transportation Statistics (BTS), in 2018 there was a total of 1.7 million ton-miles per day transported on our nation’s freight rail network, an increase of over 100,000 ton-miles from the previous year and an increase of nearly 400,000 over the past 20 years.⁷ Goods moved on the nation’s freight network are projected to grow from 1.40 billion tons in 2018 to 1.58 billion tons in 2045.⁸

Between 2017 and 2019, total U.S. carload traffic decreased from 13.4 million to just under 13.0 million carloads.^{9,10} This decline is largely associated with reduced coal and mineral/ore shipments and was expected to continue through 2020, reflecting the downturn in the economy associated with the coronavirus pandemic.

Passenger Rail

In 2019, Amtrak’s network carried 32.5 million riders to more than 500 destinations across 46 states and the District of Columbia. This translates to a daily average of nearly 89,100 trips on more than 300 Amtrak trains. Passenger travel operates on both privately and publicly owned railroads. Host railroads include 93% freight railroads, with the remainder owned by commuter railroads, commuter authorities, and municipalities.

Amtrak service is provided along the Northeast Corridor (NEC) between Washington, D.C., and Boston and on the national network incorporating state-supported and long-distance services. State-supported service is provided on 28 routes less than 750 miles in length, and long-distance service is provided on 15 routes. Between 2017 and 2019, Amtrak spent \$713 million on state-of-good-repair projects. Infrastructure maintenance and replacement is provided to Amtrak by host railroads, but the Amtrak-owned NEC has unique infrastructure.^{11,12}



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The NEC is largely owned by Amtrak and is the busiest railroad segment in the passenger rail system, providing 18.8 million trips to 12.5 million riders in 2019. The NEC is shared with eight commuter railroads (MBTA, CTail, Long Island Rail Road, Metro-North Railroad, NJ TRANSIT, SEPTA, MARC, and VRE) who financially support operating and capital costs.¹³ The NEC is at capacity and has a current state-of-good-repair backlog of \$45.2 billion. Infrastructure-related issues continued to be the largest source of delay on the corridor in 2019, causing 328,000 train-delay minutes.^{14 15}

The Northeast Corridor Commission, comprised of eight states (Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, and Maryland) and the District of Columbia, was established by Congress to determine the funding needs of the NEC that would be shared between the commuter railroads and Amtrak. The current NEC Commission report for investment needs for FY2020-24, has identified a \$32.2 billion funding requirement, with \$18 billion available, \$7.6 billion being requested through existing federal grant programs, and \$6.6 billion currently unfunded.¹⁶

FUNDING, FUTURE NEED, AND OPERATION & MAINTENANCE

Freight Rail

Over the last 40 years, private railroads have spent over \$700 billion to develop the current network; this includes \$24.9 billion in 2018 at an average of over \$260,000 per mile. Freight railroads determine their project priorities under two categories: mission-critical projects and potentially funded/optional projects. Mission-critical projects include scheduled maintenance and unscheduled repairs. Potentially funded or optional projects include those that reduce bottlenecks, line extensions, information technology solutions, and related capital investments. Private railroads reinvest close to 20% of their operating revenue into infrastructure, and in 2017, \$11.5 billion was budgeted for capital expenditures by Class I railroads. Freight railroads use their revenues to cover both operating costs and capital investments.^{17 18}

Class II and III railroads reinvest an average of 25% to 33% of annual revenues in capital expenditures and maintenance-of-way costs. Despite this investment, funding for capital projects is very challenging. A federal tax credit provides \$0.50 on every dollar spent up to \$3,500 per mile on track and bridge improvements. This has resulted in approximately \$4 billion in investment since it was enacted in 2005.¹⁹

Passenger Rail

In addition to passenger revenues and state funding, Amtrak relies on federal grants to operate, maintain, and invest in capital programs for intercity passenger rail. Under the Fixing America's Surface Transportation (FAST) Act, Amtrak is authorized from fiscal year (FY) 2016 through FY2020 a total of \$8.1 billion in federal grants, though Congress provided additional funding to support Amtrak over the course of the 5 year bill.

Fiscal Year (FY)	Annual Appropriation	NEC	National Network	Net Financing Cash Flows
2016	\$1.4 Billion	\$400 Million	\$1.0 Billion	\$1.8 Billion
2017	\$1.5 Billion	\$328 Million	\$1.2 Billion	\$2.3 Billion
2018	\$1.9 Billion	\$650 Million	\$1.3 Billion	\$2.2 Billion
2019	\$1.9 Billion	\$650 Million	\$1.3 Billion	\$2.5 Billion
2020	\$2.0 Billion	\$700 Million	\$1.3 Billion	TBD



Photo Courtesy of the American Association of Railroads

Amtrak also receives funding from state agencies. In FY2019, 18 states provided financial support, totaling \$234.2 million, an increase by \$0.4 million from the previous year.²⁰ Additionally, Amtrak received \$1 billion in direct aid through the CARES Act, with \$492 million directed toward the NEC and \$526 million toward the national network. In a recent round of COVID-19 relief

(H.R. 133), Amtrak received an additional \$1 billion, with the NEC receiving \$655 million and \$345 million directed toward the national network. It is important to note that prior to the pandemic, Amtrak was projected to require no federal funding support to cover operating costs in FY2020.

PUBLIC SAFETY

In 2019, DOT's Federal Railroad Administration (FRA) reported a total of 11,667 accidents/incidents, a slight increase from 11,247 incidents 10 years ago. Trespassing on railroad rights-of-ways remains the leading cause of rail-related fatalities, growing from 505 in 2017 to 577 in 2019, or 64% of total U.S. rail-related fatalities that year. Collisions at highway-rail grade crossings are the second leading cause of rail-related fatalities, making up approximately 30% of total fatalities. Grade crossing collisions declined in 2018 and 2019 from 2,230 to 2,216, respectively.²¹

Through the implementation of Positive Train Control (PTC), both freight and passenger rail have used technology designed to automatically stop a train before certain accidents associated with human error can occur.²² In 2020, Amtrak completed PTC installation on all of its owned or controlled track miles. Amtrak spent \$265.7 million and \$222.9 million in 2018 and 2019 respectively for PTC-related projects on their owned/controlled rail lines and equipment. In December 2020, FRA announced that PTC technology is in full operation on all required freight and passenger railroad route miles.

INNOVATION AND RESILIENCE

Rail technology development continues to focus on improving system efficiency and safety. Industry technological advances include identifying freight car, locomotive, cargo, and track problems before accidents, damage, or delays occur. Numerous track and infrastructure improvements have been advanced including the use of defect detection vehicles, which detect internal flaws in rails; improved metallurgy and fastening systems, which have enhanced track stability; and research to extend rail life, reduce maintenance costs, and improve safety. Examples include the development of ground-penetrating radar and terrain conductivity sensors that identify below ground surface problems, and cybersecurity systems advancements, including the establishment of the Rail Information Security Committee (RISC) to identify and address future threats.^{23 24} Railroad-focused technology research and development is supported by the railroad industry-owned Transportation Technology Center in Pueblo, Colorado.

As required by the FAST Act, DOT released the National Freight Strategic Plan (NFSP) which identifies opportunities for the national multimodal freight system to improve safety, security, and resilience; modernize freight infrastructure and operations to grow the economy and increase competitiveness; and support data, technology, and workforce capabilities development that improve freight system performance.

Photo by Katie Pruitt

AMTRAK'S PACIFIC SURFLINER ROUTE IN SAN DIEGO, CALIFORNIA



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RECOMMENDATIONS TO RAISE THE GRADE

- Support concepts in the National Freight Strategic Plan (NFSP) that would improve the multimodal freight network, enhance safety, provide for capacity improvements, and improve economic competitiveness. As part of implementing the NFSP, a robust National Asset Management system should be created to support the identification, prioritization, and sourcing of funding for capital investment projects.
- Continue a financial and regulatory environment that supports private rail investment and innovative financing options for future investment. This includes maintaining the now permanent federal Railroad Track Maintenance Tax Credit and supporting existing financing programs, such as the Railroad Rehabilitation and Improvement Financing (RRIF) program and Transportation Infrastructure Finance and Innovation Act (TIFIA).
- Encourage passenger rail infrastructure investment in high-population centers, and support continued investment for state-supported routes. Continue to support rail investment in added capacity and expanded service in high-density markets to relieve system stress on other modes.
- Sustain the planning for NEC investments and acquire funding for projects identified in NEC Commission’s multi-year capital investment plan.
- Fund regional freight rail investment plans, including the CREATE program, to support efficient operation and reduce delays by eliminating bottlenecks.
- For future surface transportation reauthorizations, include and fund programs that reduce hazards at railway-highway crossings.

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