PUTTING AMERICA BACK ON TRACK: THE CASE FOR A 21st CENTURY PUBLIC RAIL SYSTEM

MADDOCK THOMAS

JULY 2024

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EXECUTIVE SUMMARY

This White Paper makes the case that the U.S. needs a public rail system fit for the 21st century, which we will accomplish in several ways. We will examine the innumerable failures of the privately-owned, duopolistic Class I railroads to serve their purpose as critical transportation arteries. We will explore the history of public/governmental involvement in the development of the U.S. rail system and consider the ways private management has betrayed the investments made by the public. We will learn from examples of contemporary public rail ownership in the United States. We will also draw inspiration internationally from the successes of integrated public rail systems and lessons from the failures of fragmented, privatization rail systems. Finally, we will explore contemporary models of railroad organization to jump-start the conversation about how we should structure a public rail system that truly meets the needs of the 21st century.

The failures of private railroad management have been laid bare over the course of the past 30 years, including—

FAILING SAFETY MEASURES

- The rate of rail accidents rose by 28% between 2013 and 2022 as railroads prioritized speed over safety as a part of so-called "Precision Scheduled Railroading"
- At Norfolk Southern, the accident rate rose by a whopping 128%; at CSX it rose 72%
- Various Class Is have been caught ignoring maintenance; in a shocking example, FRA inspectors found 73% of Union Pacific locomotives to have federal defects

DISRESPECT FOR RAILROAD WORKERS:

- Over 50,000 workers have been laid off since 2015, equal to nearly 30 percent of the total workforce
- Railroad workers face increasingly unpredictable schedules and forced overtime, leading to chronic fatigue
- Railroad companies regularly retaliate against employees for reporting defects or voicing concerns over safety

DETERIORATION OF FREIGHT SERVICE:

- Class I railroads moved 30% fewer carloads of freight in 2023 than in 2000
- Rail customers described service as "the worst it has ever been" during a Surface Transportation Board hearing in 2022
- Class Is are providing a fraction of the service promised to customers, with decreased reliability

OBSTRUCTION OF PASSENGER SERVICE:

- In 2023 alone, host railroads (predominantly Class Is) caused 2,238 days of delay to Amtrak passenger trains
- By removing double trackage and cutting maintenance, Class Is have caused passenger train derailments and impeded the expansion of new Amtrak service

UNDERINVESTMENT IN CAPACITY EXPANSION:

- A 2007 study outlined the need for Class Is to invest $135 billion in capacity expansion to meet demand in 2035
- Instead, the Class Is spent $196 billion on buybacks and dividends for shareholders between 2010-2020
- Aside from this study, no national rail capacity planning has ever taken place, due to a lack of coordination among private Class Is, in contrast with regular planning conducted by public agencies for publicly owned highways and waterways

DISREGARD FOR LOCAL COMMUNITIES:

- Despite clear health risks for workers and communities near rail yards, Class Is shifted their switcher fleet towards dirtier, polluting locomotives between 2017 and 2020
- Class Is operate ever-lengthening trains that block railroad crossings, impeding first responders and forcing children to crawl under railcars to get to school

IGNORING THE NEED FOR ELECTRIFICATION:

- Overhead catenary electrification improves operational performance and lowers costs, yet Class Is have all but obstructed electrification to avoid capital investment
- Instead, they have experimented with small-scale battery and hydrogen locomotives—technologies that they themselves have testified are not viable for mainline freight rail

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An alternative to this failed private model exists: public ownership.

A SYSTEM WHICH CAN—

- Reinvest income in critical infrastructure improvements and electrification
- Deliver frequent, reliable service for freight customers with greater efficiency
- Democratically involve workers in decision-making and maintain sufficient staffing to provide them with regular schedules
- Create tens of thousands of quality union jobs through service expansion, capital reinvestment, and electrification projects
- Cooperate with Amtrak to reduce freight train delays, boosting on-time-performance for rail passengers
- Achieve a modal shift towards rail, reducing carbon emissions, shipping costs, and wear-and-tear on our nation's highways
- Electrify and decarbonize the rail system, avoiding thousands of premature deaths and reducing the negative health impacts from diesel emissions on trackside communities

Public ownership and investment have been central to the growth of the American rail industry, but private railroads have failed to uphold their end of the deal and serve the public interest:

- The Baltimore & Ohio, our nation's first common carrier railroad, was funded by the State of Maryland and City of Baltimore, who retained a majority stake in the company until the turn of the century
- Through various acts of Congress, 179 million acres of public land was given to railroads as land grants to support railroad development
- The rail system was nationalized during WWI, after private management proved incapable of the coordination needed to meet wartime demand
- The Plumb Plan, for public ownership and democratic management, was supported by rail labor and the AFL, offering a bold alternative to the chaos of private ownership
- Conrail successfully revived the Northeastern rail network after a series of dramatic railroad bankruptcies

Today, publicly owned rail systems continue to exist as critical passenger links for millions of people a day and provide freight services to countless communities that would otherwise have been abandoned by the Class Is:

- Amtrak provides rail service to over 500 towns, and has recovered from the pandemic with record-setting ridership figures
- Over 30 commuter/regional rail systems across the country move passengers in and around cities, many on fully-electrified trains
- Tacoma Rail has operated as a non-profit public utility since 1918, serving to connect the Port of Tacoma with the national rail network
- State DOTs own thousands of miles of rights-of-way, preserving freight services where Class Is sought abandonment

Internationally, publicly owned rail systems have demonstrated the advantages that such a system can provide:

- Indian Railways has electrified over 25,000 miles of track with overhead catenary in less than 10 years
- The Swiss Rail system has the highest passenger ridership in the world and a strong modal share of freight, all while achieving Europe's best on-time-performance and safety record

There are multiple models that we might draw upon when designing a new public rail system for the United States. Open access, franchising, and integrated public operation are all explored. Each has various strengths and weaknesses, and in-between options exist, but integrated public operation provides the strongest path to a rail system with nationwide coordination, operating truly in the public interest.

This paper is intended to rekindle a national conversation about our rail network. It is time for railroad workers, communities, shippers, climate activists, and rail passengers to support the Public Rail Now campaign for a publicly owned rail system – a rail system that works for all of us.


SAFETY
Think about it

INTRODUCTION

The American railroad system is broken. Just six mega-corporations, known as Class I railroads, control 70 percent of all track miles in the United States. These Class Is have run our rail system into the ground for the sake of short-term profit. Workers are plagued by erratic schedules resulting from job cuts and face retaliation for calling out safety hazards. Towns have been blown up in dramatic rail accidents from Lac-Mégantic to East Palestine, and the accident rate has risen by double-digits. The quality of rail service has deteriorated, driving customers away and harming the economy. Underinvestment in infrastructure has obstructed plans for passenger expansion and threatens to put the rail system over capacity by 2035. Trackside communities' concerns are ignored as they deal with health risks from diesel pollution and long trains cut their towns in half.

Over the past ten years, the number of railroad workers has fallen by over 50,000 since its peak in 2015. The threat of layoffs is always just around the corner, with the next round of "cost cutting." Railroad workers who survive layoffs face increasingly unpredictable schedules and forced overtime, which contribute to widespread chronic fatigue. The Class I railroads have cut the number of Shop Craft workers, who repair locomotives and freight cars, by nearly 40 percent. The number of maintenance-of-way workers—those who maintain tracks, signals, and defect detectors—has fallen by more than 21 percent. Needless to say, this cost cutting has been disastrous for rail safety.

"The American railroad system is broken. Just six mega-corporations, known as Class I railroads, control 70 percent of all track miles in the United States."

While broadly, over the past few decades, railroads have become safer and safer, we have seen that trend reverse over the last ten years. The accident rate on several of the Class Is has more than doubled. Not only have railroads been operating with bare minimum maintenance crews, but managers have also been instructing workers to sign off on maintenance work that was not performed. Workers who speak out about these practices have been fired.

Rampant cost cutting has also impacted our nation's businesses who ship by rail. In pursuit of "efficiency" and a lower operating ratio (operating costs as a percentage of revenue), railroads have unilaterally cut back on service to customers. Rail customers who used to send and receive shipments five times a week are being told that their railcars will only be picked up twice a week. Excluding intermodal container traffic, the number of carloads shipped by rail has declined by a third since 2000. It has fallen after each economic recession and each time it has failed to reach pre-recession levels. This pattern is largely because railroads furlough their workers and are unwilling to bring them back in order to support demand as our nation's economy recovers. As a result, shippers turn to trucking and never return.

Railroads have underinvested in infrastructure. Despite traffic projections from 2007 suggesting that railroads will need to invest $148 billion (more than $225 billion in 2024 dollars) in new trackage to meet demand by 2035, the Class Is have barely built any new trackage, contenting themselves to drive away customers with the ensuing poor service. This underinvestment also severely restricts the potential for expanding passenger service, even as Amtrak continues to set annual ridership records. The Class Is have similarly failed to invest in decarbonization. While the rest of the world invests in overhead catenary electrification—which brings significant operational benefits and cost saving—American railroads have only toyed with experimental battery locomotives that can only operate for 30 minutes at full power. For a country whose railroads were once the envy of the world, this is a disgrace.

"While the rest of the world invests in overhead catenary electrification—which brings significant operational benefits and cost savings—American railroads have only toyed with experimental battery locomotives that can operate for a limited 30 minutes at full power. For a country whose railroads were once the envy of the world, this is a disgrace."

Why has this happened? Simply put: instead of investing in their workers, in safe infrastructure, and in quality services, the Class Is prefer to cut costs to the bone in pursuit of short-

term profits to lavish on their shareholders in the form of stock buybacks and dividend payments. Railroad executives hold the operating ratio— derived from expenses as a percent of revenue—to be supreme. As a result, railroads will refuse even profitable traffic if it means their ratio of expenses to revenue might rise by 0.5 percent. This short-term profit-focused management system is no way to steward our nation's critical rail infrastructure.

"By removing private investors whose sole focus is short-term profit from the governance of our nation's critical railroads, our railroad system can finally be run in the collective public interest."

The worsening condition of the railroads over the past few decades can be tied to Wall Street's desire to extract maximum "value" out of our transportation system. This pressure has led to an unhealthy focus on achieving low operating ratios and cutting costs, culminating in the regime of so-called "Precision Scheduled Railroading." Norfolk Southern's attempt to adopt a slightly more service-focused operating plan, in response to massive shipper and public pressure in the wake of the disastrous derailment in East Palestine, was torpedoed by Ancora Holdings, an investor group that sought to return NS to full-blown Precision Scheduled Railroading. In the wake of this proxy battle, NS has recommitted to cut costs for an exceedingly low operating ratio and began axing service before the vote even took place. This experience has clearly demonstrated that private ownership is incapable of meeting the needs of America's shippers and public.

Then what is the solution, you say? Public ownership, democratic management, and service-focused operation. By removing private investors whose sole focus is short-term profit from the governance of our nation's critical railroads, our railroad system can finally be run in the collective public interest. Workers, shippers, and community members—who all hold critical stakes in how the railroads are operated—can have a say in running our rail system. Workers wouldn't be fired for speaking out and deferring maintenance for the sake of a quarterly earnings statement would be a thing of the past. Instead, railroaders would be encouraged to speak out to demand safety improvements and better maintenance, so that another East Palestine never happens again.

Management can eschew the operating ratio once and for all, instead pursuing sustainable long-term growth. Investments in high quality service will bring profitable traffic back to the railroad. Instead of siphoning away railroad income for buyback and dividends to shareholders, a public railroad will reinvest operating income in better infrastructure and electrification. This infrastructure investment can be coordinated and planned on a national scale to achieve cost economies and ensure the rail system is meeting the needs of all of its users. Dividends will come to the public in the form of better service at a lower price. Tens of thousands of high-quality jobs will be created through renewed investment in and expansion of rail service, as well as though the economic activity spurred by high-quality rail transportation.

This white paper will lay out the case for public ownership. It will examine in detail how the private Class I railroads are failing almost every constituency in America and how a public rail system might rectify these failings. It will touch on the long, proud, yet largely unknown history of publicly owned railroads in America, dating back to the very first common carrier. It will also compare international rail systems to evaluate how a public rail system might be best structured in the United States. This paper will conclude by recommending how the American rail system should be restructured to serve the public interest and meet our country's transportation needs in the 21st century.

WHY WE NEED A PUBLIC RAIL SYSTEM

The struggle between robber barons and the public interest for control of the U.S. railroad system dates back to the 19th century. Railroads have frequently pursued "efficiency" in the form of longer trains, fewer workers, and less frequent service to customers. Shippers fought for the Interstate Commerce Act of 1887, to enshrine the common carrier obligation in law and require railroads to carry all customers' traffic at a fair price. The Act also created the Interstate Commerce Commission (ICC) to regulate the rail industry and check its monopolistic power over interstate shipping.

Even under ICC regulation, railroads frequently fought with passengers and shippers over the extent of their obligations and sought to discontinue low-margin service. With railroad bankruptcies commonplace in the 1960s and 70s, Congress passed the Staggers Act of 1980 to deregulate the railroads in the hope of saving the industry. Deregulation led to massive consolidation, creating the rail network that we know today, with just six Class I railroads: Union Pacific, BNSF, CSX, Norfolk Southern, CPKC, and Canadian National. These railroads control the overwhelming majority of all rail traffic in North America. The Class Is represent roughly 69 percent of U.S. trackage and a staggering 94 percent of the rail industry's revenue.[1]

1. Association of American Railroads. "Overview of America's Freight Railroads." October 2018.

As figure 1 shows, the United States has two railroad duopolies: Union Pacific and BNSF in the west, CSX and Norfolk Southern in the east. There are also two Canadian Class Is that operate much smaller networks in the United States. In addition to the Class Is—railroads earning $1 billion or more in annual revenue—there are hundreds of smaller Class II and Class III railroads. These local/regional railroads are not the core subject of our analysis because they comprise such a comparatively small proportion of U.S. rail volume and oftentimes face similar issues to shippers with the Class Is.

This duopolistic railroad system has left many American companies as captive shippers, with only one railroad to serve them. With near-monopolies, railroads have begun earning enormous profits. Shippers, however, have not seen

consummate enormous improvement in service quality and the number of carloads shipped by rail has plummeted since 2000. Rather than reinvesting their profits in infrastructure improvements and ensuring a better quality of life for their workers, the Class Is have chosen to lavish their shareholders with billions in dividends and buybacks.

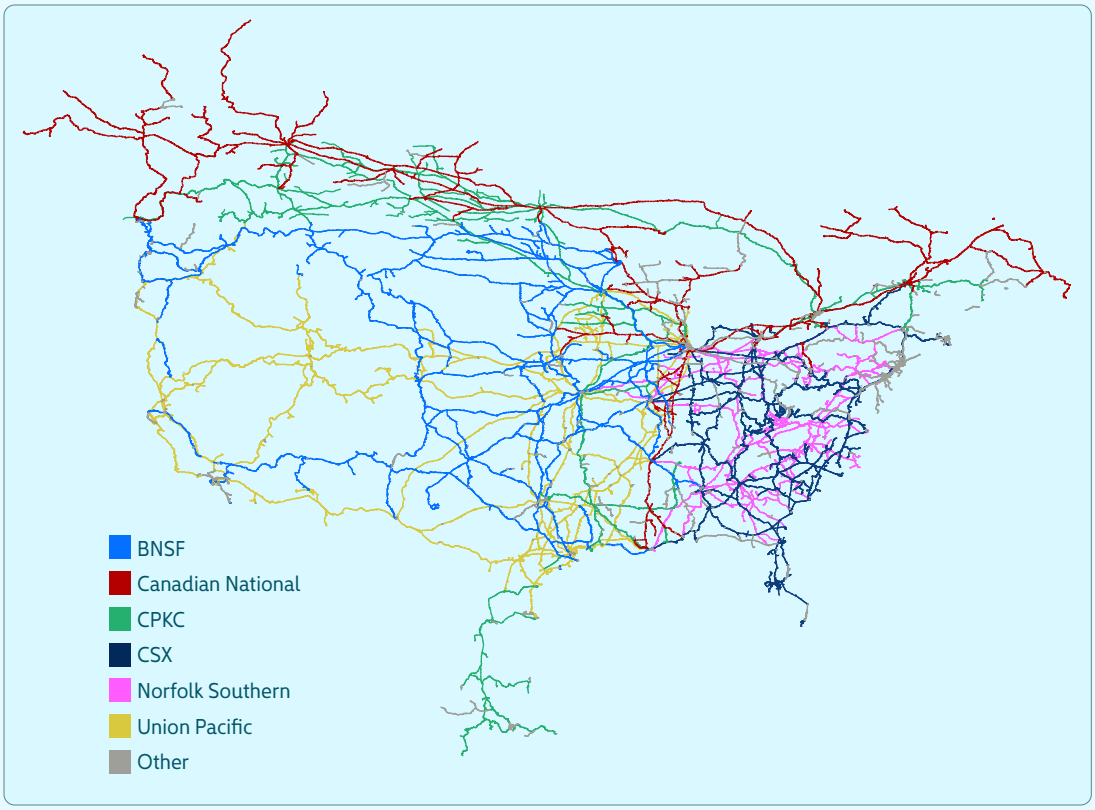

Figure 1. Mainline tracks of North American Class I railroads operating in the United States[2]

The combination of deregulation and a focus on "efficiency" above all else culminated in Precision Scheduled Railroading (PSR), a model developed by railroad executive Hunter Harrison in the 1990s. Above all, PSR concentrates on reducing the operating ratio, a metric representing operating expenses as a percentage of revenue. To achieve a low operating ratio, railroads have begun running miles-long trains, cut tens of thousands of jobs, and removed trackage deemed unnecessary. By 2019 nearly every Class I railroad had adopted PSR. The results have been disastrous, from a rise in railroad accidents and the disruption of long trains parked in the middle of towns to increasing complaints about service quality.

Ten- and thirty-year trends show that PSR is not the sole culprit for this decline in the American rail industry. Instead, the horrendous state of the North American railroad system is the result of a long history of prioritizing corporate profit over

2. Data from U.S. DOT Bureau of Transportation Statistics; map made by author in ArcGIS with help from Kira McDonald.

the public interest. There have been many attempts at checking railroads' monopoly power over the past two centuries but none of them have succeeded in a lasting way.

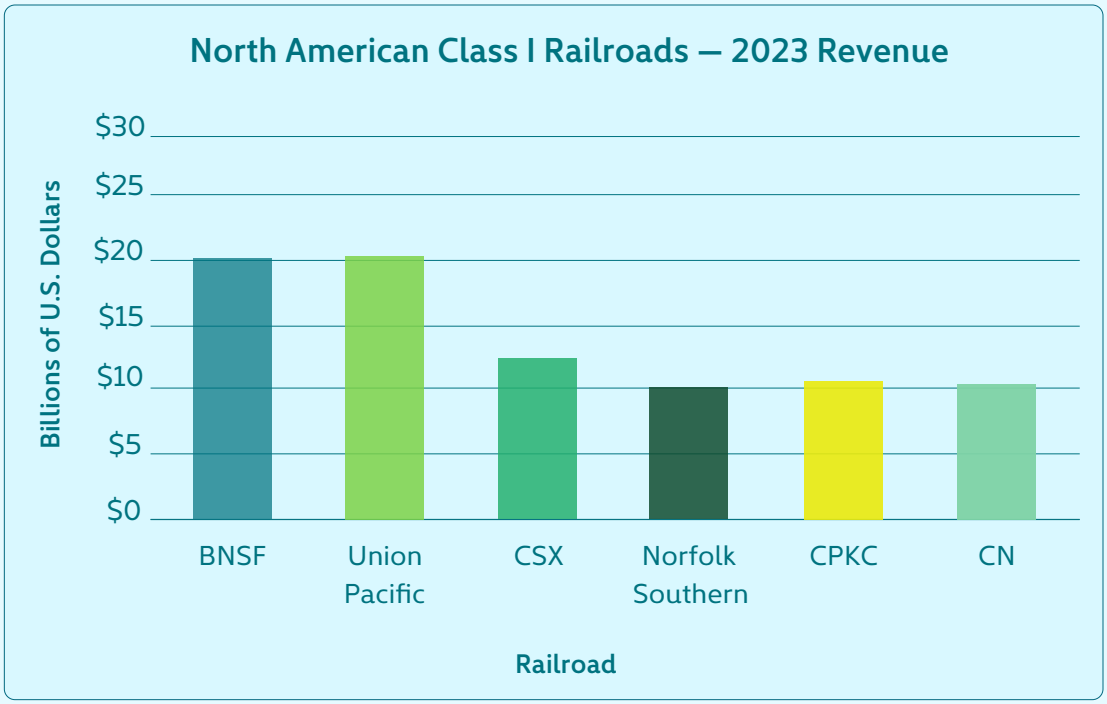

Figure 2. Class I railroads by 2023 revenue[3]

This section will make the case that Class I railroads' preoccupation with "efficiency" and private profit has been an existential threat to our nation's commerce, workers, and communities for decades — and remains one today. In the face of the issues outlined below, the only lasting solution is to bring the railroads under public ownership.

3. Respective Annual Reports, SEC, STB filings. CPKC and CN revenues are comprehensive, including Canadian and Mexican revenue—both railroads are comparatively small Class Is within the United States.

LASTING IMPROVEMENTS IN RAIL SAFETY

Concerns about railroad safety were catapulted to the forefront of the national conversation in the wake of the explosive train derailment in East Palestine, Ohio in February 2023. An overheated wheel bearing led a Norfolk Southern train to derail and spill hundreds of thousands of gallons of hazardous chemicals into the environment and surrounding town, with a "controlled release" of vinyl chloride causing a mushroom cloud to rise over the horizon.[4]

4. Mike Gauntner, "Norfolk Southern fights federal, state penalties over East Palestine derailment," (June 20 2023). https://www.wfmj.com/story/49098538/norfolk-southern-fights-federal-state-penalties-over-east-palestine-derailment; Josh Funk, "Union Official Says Railroad Safety Compromised by Job Cuts, Time Constraints," *Industrial Distribution (June 29 2023).* https://www.inddist.com/logistics/news/22866187/union-official-says-railroad-safety-compromised-by-job-cuts-time-constraints.

The events in East Palestine were dramatic, but the decisions that led to this derailment can be traced to a long history of cost-cutting and ignoring workers. Reversing a decades-long trend of safety improvements, the advent of PSR and consolidation have led to a 28 percent increase in the accident rate between 2013 and 2022.

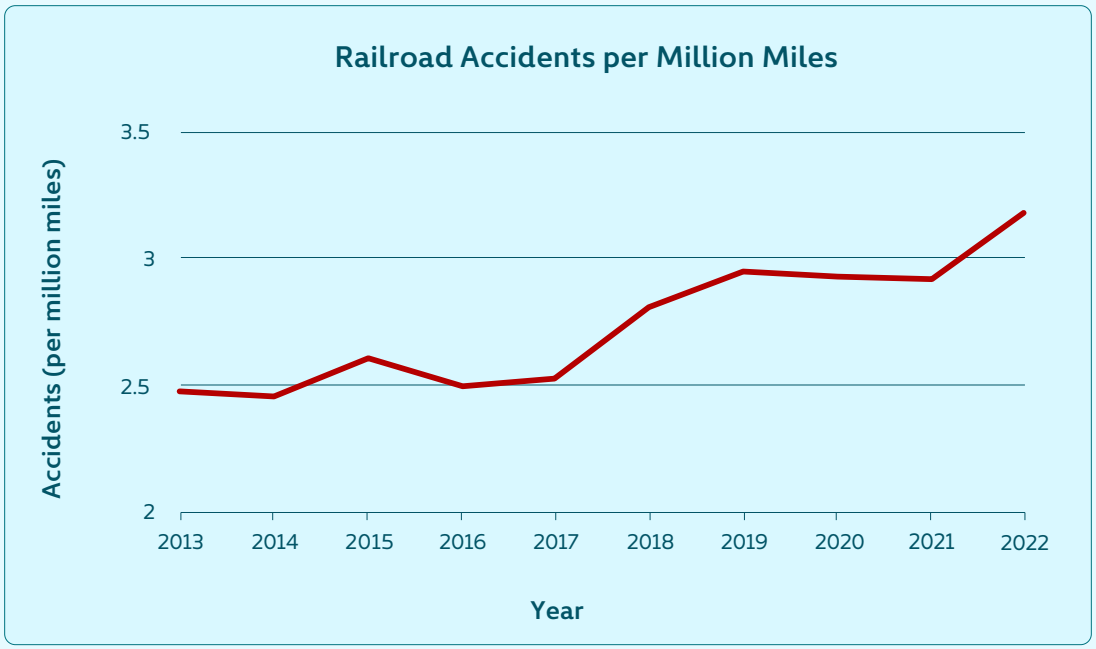

Figure 3. Railroad accidents per million train miles[5]

This rise in accidents comes as the direct result of a private operating model that prioritizes "efficiency" and a lower operating ratio at the expense of safety. Tens of thousands of maintenance workers have been laid off. Between 2011 and 2021, 40 percent of all Shop Craft workers' jobs were cut.[6] Those who remain are given less and less time to inspect longer and longer trains. Oftentimes, workers are given one minute or less to inspect each railcar—down from three just a few years ago.[7]

The safety picture is even worse if you look at the big Class I railroads. Since 2013, the accident rate has more than doubled (up 123 percent) at Norfolk Southern, risen 52 percent at Union Pacific, and increased 72 percent at CSX.[8] The only Class I not to see a marked rise in its accident rate is BNSF, which is the only one not to implement PSR (though as we shall see, this does not exempt BNSF from criticism). This steeper increase in accidents can be traced to aggressive cost cutting combined with a growing pressure to speed miles-long trains through the network without inspection. In the

5. "2.09 - Train Accidents and Rates," Federal Railroad Administration, accessed July 26, 2023, https://safetydata.fra.dot.gov/officeofsafety/publicsite/query/TrainAccidentsFYCYWithRates.aspx.

6. Government Accountability Office, *Information on Precision-Scheduled Railroading*, United States Government Accountability Office (December 2022), 15.

7. Funk, "Union Official Says Railroad Safety Compromised by Job Cuts, Time Constraints."

8. Office of Safety Analysis, "2.09 - Train Accidents and Rates."

last decade, CSX and Norfolk Southern cut their overall workforces by 39 percent. BNSF cut the fewest employees but still laid off 9 percent of its workforce during the same period.[9] Not only are there far fewer workers, but longer trains are also more dangerous. A recent academic study found that 100 car trains are 11 percent more likely to derail compared to 50 car trains and 200 car trains have a 24 percent higher derailment risk.[10]

9. Government Accountability Office, *Information on Precision-Scheduled Railroading*, 14.

10. Peter M. Madsen et al., "The relationship between freight train length and the risk of derailment," *Risk Analysis* (2024), https://doi.org/10.1111/risa.14312, https://onlinelibrary.wiley.com/doi/abs/10.1111/risa.14312.

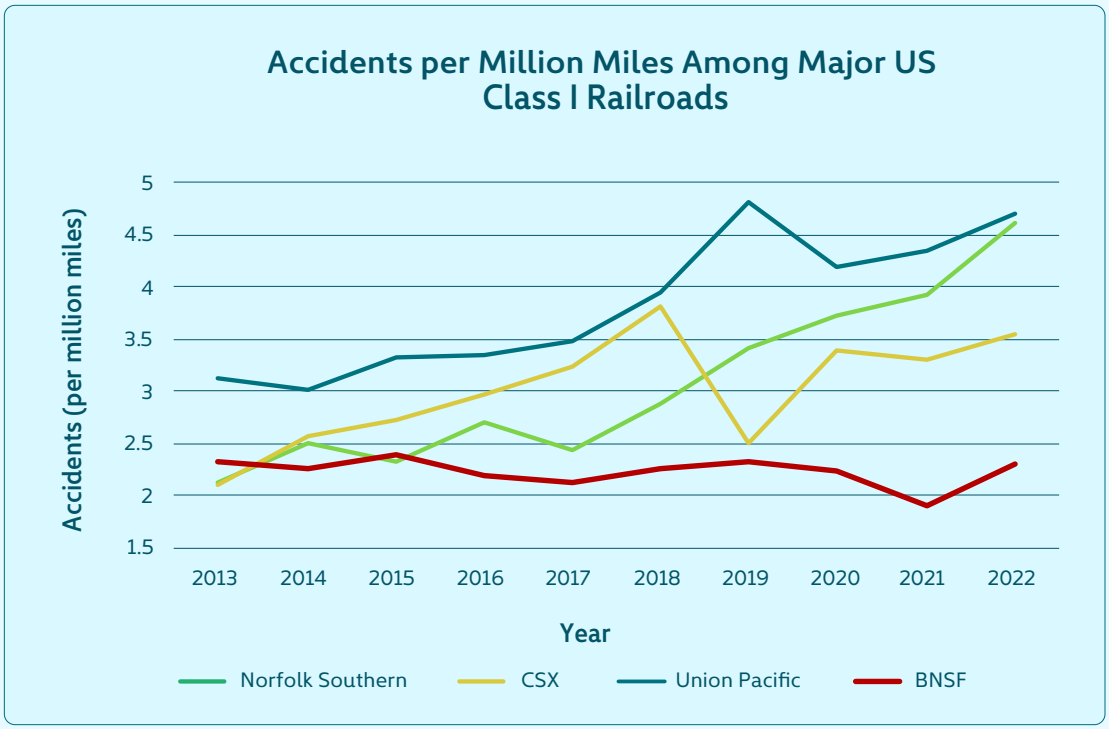

Figure 4. Railroad accidents per million train miles among major U.S. Class I railroads

However, these statistics fail to provide a complete picture. Countless incidents go unreported due to a pervasive culture of railroads retaliating against, or even firing, workers who speak out about safety concerns. There is a widespread practice of supervisors pressuring car inspectors to flag fewer defects.[11] In some cases, car inspectors will refuse to sign off on a railcar due to safety concerns and their supervisor will sign the car themselves in order to move it out of the yard quicker.

11. Topher Sanders et al., ""Do Your Job." How the Railroad Industry Intimidates Employees Into Putting Speed Before Safety," *ProPublica*, November 15, 2023, https://www.propublica.org/article/railroad-safety-union-pacific-csx-bnsf-trains-freight.

These practices are reinforced by railroads' performance-pay systems that incentivize efficiency when calculating bonus pay, and score managers based on how few "bad orders" their yard issues. These incentives encourage managers and supervisors to push cars through their yards as fast as possible, even if that means skipping inspections or overlooking

car defects. Union Pacific has been so bold as to ask Federal Railroad Administration inspectors to leave its yards because they were slowing down freight.[12]

The focus on minimizing dwell times by the Class Is has put immense pressure on yardmasters to send train consists out of the yard as fast as possible. Many rail yards were not designed for today's trains, which can approach miles in length. Under pressure from management to keep cars moving, with inadequate yard space, yardmasters are often forced to send unsafe trains consists, with poor weight distribution, out on the mainline. In one notable example, a two-mile-long CSX train derailed while going down a mountain grade.[13]

A report by the railroad unions highlights BNSF instructing its managers to "Sign off the general maintenance items; they do not need to be performed" for its locomotive fleet.[14] A year later, BNSF claimed not to have the manpower to perform required maintenance on a backlog of over 1,000 locomotives. As BNSF has continued to furlough Shop Craft workers, unions have called on the FRA to inspect BNSF's locomotive fleet, alleging widespread defects as a result of the railroad's cost cutting and deference of maintenance.[15]

Widespread defects at BNSF do not seem altogether unlikely. An unannounced FRA inspection of Union Pacific in fall 2023 identified federal defects on a staggering 72.7 percent of its locomotives and nearly 20 percent of its railcars.[16] Federal defects on three out of four locomotives should be cause for an immediate program to increase maintenance efforts and hire more Shop Craft workers. Unfortunately for the public and for railroaders who rely on these locomotives, Union Pacific has exhibited little interest in doing so, preferring to keep employee headcounts depressed and spend money on dividends instead.

Not only are equipment defects being underreported, so are incidents with moving trains. Without an FRA requirement to report close calls, railroaders seldom do, thanks to the frequent practice of railroads retaliating against whistleblowers. Incidents like when a 90-car train full of highly flammable propane rolled three miles through a town in Mississippi without its crew are excluded from FRA data because the train fortuitously come to a stop without injuring anyone.[17] A confidential federal safety hotline, called the Confiden-

12. Topher Sanders, "Regulators Blast Union Pacific for Running Unsafe Trains," *ProPublica*, September 11, 2023, https://www.propublica.org/article/union-pacific-federal-railroad-administration-unsafe-trains.

13. Dan Schwartz and Topher Sanders, "The True Dangers of Long Trains," *ProPublica*, April 3, 2023, https://www.propublica.org/article/train-derailment-long-trains.

14. Brotherhood of Railroad Carmen Division et al., *A Five-Pronged Approach To Improve Industry Safety And Service Reliability For Class I Freight Railroads* (Surface Transportation Board, January 9 2024), 15-17.

15. Noi Mahoney, "Mass furloughs reported at BNSF Railway operations in 4 states," *FreightWaves* (March 1 2024). https://www.freightwaves.com/news/mass-furloughs-reported-at-bnsf-railway-operations-in-4-states.

16. Brotherhood of Railroad Carmen Division et al., *A Five-Pronged Approach To Improve Industry Safety And Service Reliability For Class I Freight Railroads*, 17.

17. Sanders et al., ""Do Your Job." How the Railroad Industry Intimidates Employees Into Putting Speed Before Safety."

tial Close Call Reporting System (C3RS) exists to remedy this problem but until 2024, no Class I railroad used it.[18] In fact, making the case that public ownership would be more transparent and accountable, 22 of the 28 railroads that participate in C3RS are publicly owned or operated—and one of the six private railroads is a heritage steam operator, the Strasburg Rail Road.[19] Norfolk Southern only joined C3RS in February 2024 under immense public pressure from the fallout of its derailment in East Palestine, Ohio.

All of these unsafe practices can be traced back to the private railroads' focus on lowering their operating ratio and boosting profits at all costs. We have seen an unconstrained effort to operate with the smallest workforce possible. Railroads spend as little money on maintenance as they can. As a result, they have to hide defects en masse, but they cannot hide worsening accident rates that threaten workers' and communities' safety.

The only way that we will achieve true safety is if extracting short-term profit for shareholders ceases to be the railroads' primary objective. This outcome can be achieved through a public rail system, one that operates in the public interest, putting workers' and communities' safety ahead of profit. A public rail system means one that centers rail workers and communities in decision-making, inviting them to propose reforms to improve safety, rather than threatening them for speaking up. A public rail system also means employing sufficient maintenance workers to keep equipment and tracks defect free. It means regular inspections with sufficient time given for car inspectors to do their jobs thoroughly. None of these proposals are remotely unfeasible, but they will require a paradigm shift in how we operate our railroads.

RESPECT FOR RAIL WORKERS AND SUFFICIENT STAFFING

Railroad workers play a critical role in ensuring that America's rail traffic moves safely and efficiently across the country. Unfortunately, their ability to do so has been hampered by railroad company's aggressive layoffs and understaffing. Workers are pressured by management to ignore defects and face retaliation when they report safety concerns nonetheless.

18. Josh Funk, "Railroads resist joining safety hotline because they want to be able to discipline workers," *Associated Press*, August 24, 2023, https://apnews.com/article/railroad-safety-derailments-anonymous-hotline-dc509efa21aa51554078998964ba4ea6.

19. "Participating Railroads," updated February 20, 2024, accessed March 24, 2024, https://railroads.dot.gov/railroad-safety/divisions/safety-partnerships/c3rs/participating-railroads.

The conflict between railroad workers and management is as old as the industry itself, but the pursuit of short-term profits under Precision Scheduled Railroading (PSR) over the past ten years has drastically accelerated the decline in workers' quality of life. Putting America's rail industry back on track will require prioritizing workers safety and wellbeing—this can be best achieved through public ownership that incorporates workers into the decision-making process.

Total railroad employment has dropped nearly thirty percent between 2013 and 2024. This precipitous decline began well before the Covid-19 recession and its steepest drop aligns closely with many of the Class I's implementation of PSR beginning in 2019.[20]

20. Government Accountability Office, *Information on Precision-Scheduled Railroading*, 9-15.

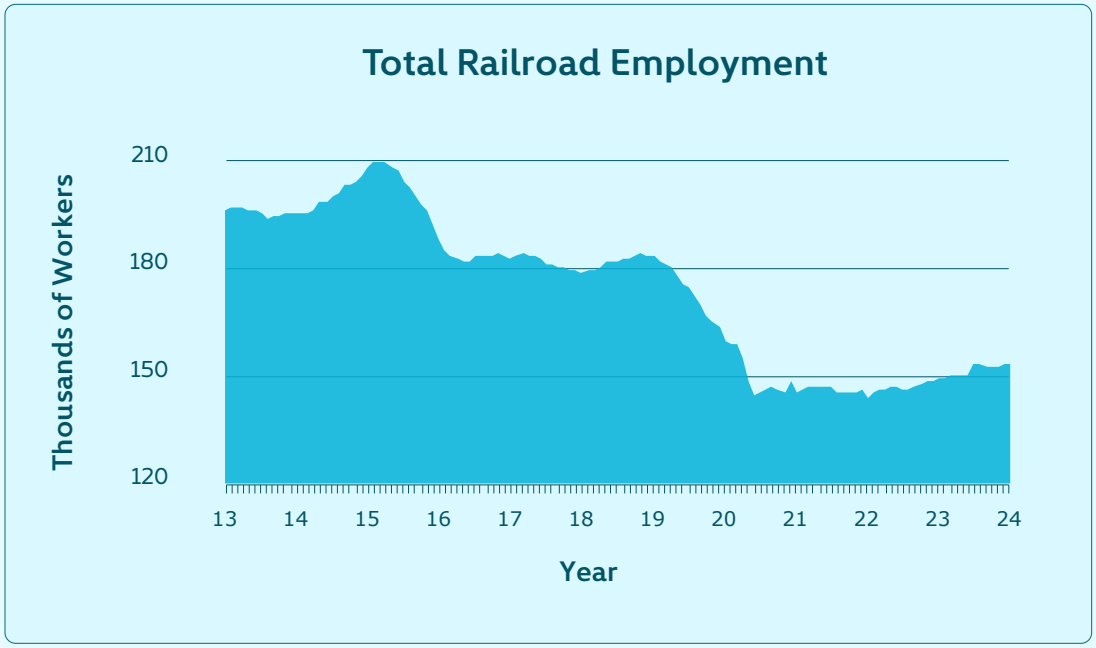

Figure 5. Total railroad employment (2013-2024)[21]

Following these massive staffing cuts, many railroaders are doing the same work as two or three people beforehand. Railroad companies are forcing employees to work longer, more irregular hours, with less time to perform critical tasks. Examples previously discussed in the safety section such as car inspectors having only one minute to inspect each railcar or a track inspector working 13-hour days for weeks on end are just the tip of the iceberg.

21. U.S. Bureau of Labor Statistics, "All Employees, Rail Transportation [CES4348200001]," (FRED, Federal Reserve Bank of St. Louis). https://fred.stlouisfed.org/series/CES4348200001.

Irregular schedules, overwork, and persistent understaffing have contributed to an epidemic of fatigue among railroaders in the operating crafts. Nearly 40 percent of all locomo-

tive engineers and conductors are highly fatigued, according to an FRA study.[22] This is detrimental to workers' health and poses a public safety risk. Highly fatigued conductors are 4 times more likely to miss a required stop and fatigued engineers are 3.4 times more likely to have had a near miss while operating a locomotive.

This widespread fatigue can be traced directly to railroads' cost cutting which has put more and more railroaders on the "extra board" where they don't know which train they will be on until they get a call telling them they have two hours to report to work.[23] Just under 90 percent of engineers and conductors report "irregular work hours" as contributing to fatigue.[24] The next four most cited causes for fatigue are long work hours, lack of sleep, and little time off between shifts (all reported by 60 percent or more of surveyed workers).

This epidemic of fatigue is entirely of railroad companies' own making and represents a deliberate choice to prioritize profits over workers' wellbeing. Railroaders could be provided with more regular work hours and proper time off between jobs, but our rail system would have to be properly staffed and workers would need to be respected. This would be possible under a public rail system where workers have a say in operations, but the Class Is have provided little reason to believe such an improvement is possible under private ownership.

Fatigue and overwork have hardly been limited to the operating crafts. Pursuant to job cuts of more than 40 percent in equipment maintenance over the past ten years, Shop Craft employees are now working 59 percent more overtime hours.[25] Work that was previously distributed among a larger workforce is now forced overtime for the employees who remain. Maintenance-of-way employees face understaffing, furloughs, and increased outsourcing of their work to non-union contractors, in violation of collective bargaining agreements (CBAs).[26]

Unfortunately, Class Is are no stranger to illegal behavior or violating CBAs. In June 2023, a Canadian federal court held Canadian Pacific (CP) in contempt for more than 20 incidents of "intentionally" overworking crews.[27] The court ruling noted that CP's own evidence suggests there are thousands of incidents annually where crews are not off within 10 hours, as stipulated under the CBA. Retaliation against employees who speak up about safety or dire workplace conditions is

22. Federal Railroad Administration, *The Impact of Commute Times on the Fatigue and Safety of Locomotive Engineers and Conductors, Department of Transportation* (June 2023), 31-35.

23. The amount of time varies slightly by railroad, but the general principle remains the same: more and more railroaders are on unstable schedules, in large part thanks to PSR and job cuts.

24. Federal Railroad Administration, *The Impact of Commute Times on the Fatigue and Safety of Locomotive Engineers and Conductors*, 28.

25. Brotherhood of Railroad Carmen Division et al., *A Five-Pronged Approach To Improve Industry Safety And Service Reliability For Class I Freight Railroads*, 22.

26. Joanna Marsh, "Maintenance-of-way union sues BNSF over workforce shortages," *FreightWaves* (August 2 2023). https://www.freightwaves.com/news/maintenance-of-way-union-sues-bnsf-over-workforce-shortages; Mahoney, "Mass furloughs reported at BNSF Railway operations in 4 states."

27. "Canadian Pacific Guilty of Contempt of Court in Sweeping Decision on Excessive Hours," updated June 7, 2023, accessed August 4, 2023, https://teamsters.ca/blog/2023/06/07/canadian-pacific-guilty-of-contempt-of-court-in-sweeping-decision-on-excessive-hours/.

also commonplace. Workers have been fired for reporting track or equipment defects, as the railroads prioritize speed over safety.[28] This response has put workers' lives and livelihoods at risk. When accidents do occur, railroad companies are quick to shift the blame from themselves onto the workers. On top of the FRA accident statistics are hundreds of other deaths and injuries on the job that don't make it to federal regulators.[29]

Railroaders who are injured on the job and subsequently fired by the railroads as scapegoats frequently sue their company in recourse. Railroad companies' behavior in these cases has been combative, and in some cases, outright illegal. Courts have found railroad companies guilty of destroying evidence, witness tampering, and intimidating workers in case after case spanning decades of litigation.[30] Despite repeated multi-million-dollar fines and admonishment from judges over withholding evidence and intimidation tactics, railroads continue to engage in the very same practices.

After all the harm that these cost-cutting measures have caused to railroaders, the railroad industry is still pushing to eliminate onboard conductors and shift to one-person crews.[31] The prospect of one-person crews raises serious concerns, particularly when 40 percent of engineers already report being highly fatigued due to the Class I's PSR-induced irregular work schedules and long hours. There are further concerns about the inaccessibility of much of America's rail network to proposed ground-based conductors, such as on mountainous routes with no adjacent road, or the role of conductors in checking railcars while engineers stay in the locomotive.[32]

The Federal Railroad Administration recently promulgated a final rule on train crew staffing that on surface mandates two-person crews. The rule, however, contains a number of exemptions leaving open the future possibility for railroads to implement one person crews.

In an industry that has already cut staffing to the bone, a complete restructuring is needed to get back on track. Fines and legal action have failed to hold railroads accountable for providing unsafe working conditions or disrespecting their employees. Class Is have consistently shown a willingness to prioritize profit over workers' health and wellbeing, as evidenced by widespread fatigue and forced overtime.

28. Danelle Morton and Topher Sanders, "Union Pacific Fired Him Rather Than Heed His Warnings of Dangerous Rail Conditions," *ProPublica*, November 18, 2023, https://www.propublica.org/article/union-pacific-railroad-dangerous-conditions-warnings-fired-employee; Sanders et al., ""Do Your Job." How the Railroad Industry Intimidates Employees Into Putting Speed Before Safety."; Maximillian Alvarez, "Railroad Whistleblowers Keep Losing Their Jobs," *In These Times* (July 21 2023). https://inthesetimes.com/article/working-people-rail-worker-whistleblower.

29. Topher Sanders et al., "What's Missing From Railroad Safety Data? Dead Workers and Severed Limbs.," *ProPublica*, March 13, 2024, https://www.propublica.org/article/railroad-safety-data-missing-dead-workers-severed-limbs.

30. Ryan Raiche, "Destroyed evidence and retaliation: The alarming pattern at Minnesota's largest railroad," (June 8 2023). https://kstp.com/5-investigates/destroyed-evidence-and-retaliation-the-alarming-pattern-at-minnesotas-largest-railroad/; Topher Sanders et al., "When Railroad Workers Get Hurt on the Job, Some Supervisors Go to Extremes to Keep It Quiet," *ProPublica*, December 16, 2023, https://www.propublica.org/article/railroad-worker-injuries-union-pacific-csx-cn-norfolk-southern.

31. "Freight Rail & Crew Size," Association of American Railroads, updated February, 2024, https://www.aar.org/issue/crew-size/.

32. Ron Kaminkow, "What's Wrong with Single Employee Train Operations?." https://www.railroadworkersunited.org/problems-w-1person-crews.

Providing workers with safe working conditions and a decent quality of life outside of work will require reprioritizing our railroad system away from short-term profit and towards a long-term focus on quality of service. This pivot, under public ownership, must include worker involvement in decision-making and full staffing. Frontline workers have unique and unparalleled knowledge of railroad operations, knowledge that could be harnessed to achieve safety improvements and operational efficiencies instead of resorting to layoffs to reduce costs. Public ownership can improve operational safety, provide workers with regular schedules, and replace retaliation with genuine worker participation at every level of decision-making.

RESTORING RELIABLE, HIGH-QUALITY SERVICE

Railroads have gone through periods of poor service quality before, but the advent of Precision Scheduled Railroading (PSR), accompanied by rampant cost cutting, has driven freight customers away from the railroads in droves. Seeking to minimize their operating ratio, railroads have neglected customers, in favor of lowering expenses. The result has been utter neglect of rail shippers. To quote the National Stone, Sand and Gravel Association, whose members rely on railroads to ship their products: "[rail service] is the worst that it has ever been."[33]

PSR's regime of cost cutting and service reduction is the logical conclusion of management's obsession with the operating ratio, a metric representing operating expenses as a percentage of revenue. This metric dates back to the late 1800s but has become ingrained in railroad management practices to this day.[34] A consequence of management's obsession with the operating ratio and maximizing "efficiency" is that railroads will avoid growth, out of concern that new profitable traffic might not be profitable enough and would worsen the company's operating ratio. While this operating mantra is enormously profitable for railroad shareholders, it has stifled our nation's economy and harmed businesses that rely on rail transportation. Furthermore, these practices are destroying the rail industry itself, by cutting service and driving away traffic that could otherwise strengthen rail volumes.

33. National Stone Sand and Gravel Association, "National Stone, Sand and Gravel Association Comments on Urgent Issues in Freight Service," (Surface Transportation Board, April 22 2022).

34. Uday Schultz, "Efficiency and the Decline of American Freight Railroads," *Home Signal*, December 27, 2021, https://homesignalblog.wordpress.com/2021/12/27/efficiency-and-the-decline-of-american-freight-railroads/.

As a result of PSR, railroads have cut switching service to customers, in some cases picking up railcars only two days a week, rather than five, even when a contract is in place for service five days a week. Railroads are making these changes without any communication to their customers, hampering shippers' ability to compensate for the service outage.[35] Service is increasingly inconsistent even when frequency is not cut: shippers report receiving railcar deliveries on Wednesdays and Saturdays, even when the agreed upon switching days are Tuesday and Thursday.[36] It is nearly impossible to plan a supply chain when you have no idea when railcars will arrive or be picked up, but this is the situation that railroads have foisted on countless businesses across the country.

These issues cost businesses millions of dollars from spoiled products, production shutdowns, unplanned overtime, and unfilled orders. Collectively the impact to the economy can be hundreds of millions of dollars lost annually from poor rail service.[37] Poor rail service has been particularly harmful to our nation's farmers and agriculture industry. Agriculture is an inherently seasonal industry, and railroads' cost-cutting has hampered farmers' ability to meet higher shipping demand during harvest seasons, undercutting U.S. agriculture's competitiveness and raising prices on consumers.[38]

35. National Stone Sand and Gravel Association, "National Stone, Sand and Gravel Association Comments on Urgent Issues in Freight Service."; Food and Beverage Issue Alliance, "Food and Beverage Issue Alliance Comments on Urgent Issues in Freight Rail Service," (Surface Transportation Board, April 22 2022). https://snacintl.org/wp-content/uploads/2022/04/FoodandBeverageIssueAllianceComments-STB_EP770_220422-1.pdf; U.S. Wheat Associates, National Association of Wheat Growers, and North American Millers' Association, "U.S. Wheat Associates, National Association of Wheat Growers and North American Millers' Association Comments," (Surface Transportation Board, April 22 2022). https://namamillers.org/wp-content/uploads/2022/04/04-21-22-Joint-Wheat-Comments-STB-Service-Challenges.pdf.

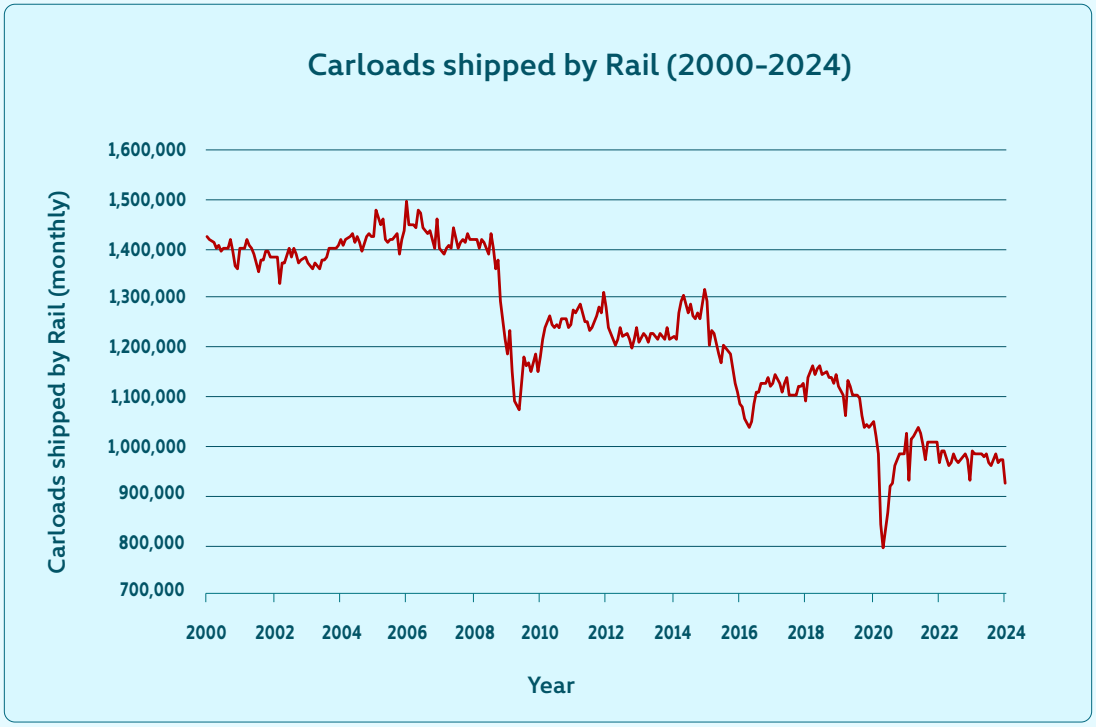

Figure 6. Monthly carloads shipped by rail, seasonally adjusted, 2000-2023[39]

Laying off workers and mothballing equipment during a recession may help railroads' bottom line in the short term, but it also handicaps their ability to provide service to customers as the economy recovers. Railroads' focus on "efficiency" and a low operating ratio leads customers to shift their traffic away from rail and onto trucks, never to return. We can watch this pattern play out in the 21st century in figure 6 as the number of rail carloads trends consistently down after each recessionary period, even once the economy fully recovers and returns to growth.

This trend has been exacerbated by PSR, but the tendency of private railroads to cut their workforce and inadequately respond to demand during economic recovery was noted as far back as the early 1900s, by Glenn Plumb and the Interstate Commerce Commission.[40] Rail carloads have declined by nearly 30 percent between the turn of the century and 2023.[41] This loss represents a concrete failure of our nation's railroads and transportation planning. At the same time that we should be shifting more freight onto rail, for its greater efficiency, environmental friendliness, and ability to reduce congestion on highways, poor rail service from the Class Is has driven customers to put their freight onto trucks. This has harmed America's economic competitiveness through higher transportation costs. When companies cannot rely on our transportation networks, they are also likely to consider relocating their manufacturing abroad.

Intermodal container traffic has been one bright spot for railroads, growing by roughly 40 percent since 2000.[42] However, this growth has primarily focused on high volume shipments between ports and large cities. As with carload shipments, smaller shippers and cities are being intentionally left behind by railroads in the name of "efficiency." In 2018, in order to implement PSR, CSX cut hundreds of origin-destination pairs, or "lanes," from its service offerings. This included all domestic intermodal traffic to Detroit. CSX also rerouted Baltimore-bound freight to its terminal in Chambersburg, adding a minimum two hours' drive each way for trucks picking up containers bound for Baltimore.[43]

These service cuts force rail shippers to redesign their supply chains and can cause millions of dollars in added costs. One of the crucial problems is that intermodal traffic is very low margin, due to the added cost of transloading and truck transportation on either end of the rail journey. The only highly

36. National Stone Sand and Gravel Association, "National Stone, Sand and Gravel Association Comments on Urgent Issues in Freight Service."

37. Mary Kennedy, "STB Rail Service Hearing Exposes Insufficient Service, Poor Worker Morale," *Market Matters Blog, Progressive Farmer,* May 2, 2022, https://www.dtnpf.com/agriculture/web/ag/blogs/market-matters-blog/blog-post/2022/05/02/stb-rail-service-hearing-exposes.

38. U.S. Wheat Associates, National Association of Wheat Growers, and Association, "U.S. Wheat Associates, National Association of Wheat Growers and North American Millers' Association Comments."

39. U.S. Bureau of Transportation Statistics, "Rail Freight Carloads," (FRED, Federal Reserve Bank of St. Louis). https://fred.stlouisfed.org/graph/?g=18mpS.

40. Glenn E. Plumb and William G. Roylance, *Industrial Democracy: A Plan For Its Achievement* (New York: B. W. Huebsch, Inc, 1923), 172-75.

41. U.S. Bureau of Transportation Statistics, "Rail Freight Carloads."

42. U.S. Bureau of Transportation Statistics, "Rail Freight Intermodal Traffic," (FRED, Federal Reserve Bank of St. Louis). https://fred.stlouisfed.org/series/RAILFRTINTERMODALD11.

43. Ari Ashe, "CSX to eliminate about 300 more intermodal lanes in 2019," *Journal of Commerce* (October 5 2018). https://www.joc.com/article/csx-eliminate-about-300-more-intermodal-lanes-2019_20181005.html.

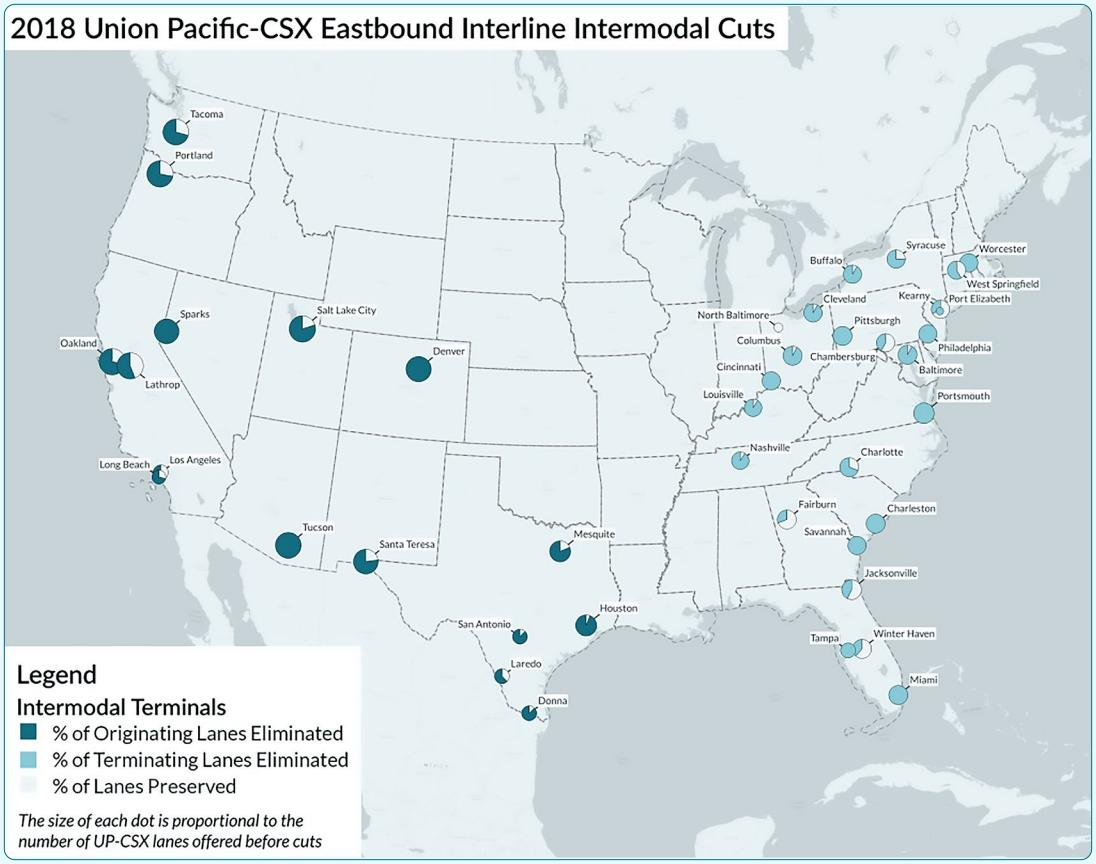

Figure 7. Cut to Union Pacific-CSX eastbound interline intermodal lanes, 2018[44]

profitable form of intermodal service is that which is operated between large cities or ports, such as Los Angeles and New York City, in miles long trains. To focus on this traffic, as seen in figure 7, railroads have eliminated hundreds of services that don't meet this high threshold of profitability.[45]

The message that the rail industry has sent to customers outside a select few cities is simply "we do not want your business." This runs counter to the idea that railroads should serve as a common carrier—providing transportation to all customers equally at reasonable rates—and creates regional inequalities in access to transportation.

Creating a resilient rail transportation system, with high quality service, in the United States will require a publicly owned rail system. It is insufficient to hope that Class I railroads will shift away from Precision Scheduled Railroading towards a better, more service-focused business model. As the Ancora-Norfolk Southern proxy battle goes to show, whenever railroads so much as appear to be prioritizing long-term gains over short-term profits, Wall Street firms will jump in to oust management. In response to Ancora's proxy battle, Norfolk Southern completely succumbed to their demands,

44. Uday Schultz, "Chicago's Railroad Problem," *Home Signal*, July 18, 2023, https://homesignalblog.wordpress.com/2023/07/18/chicagos-railroad-problem/.

45. Schultz, "Chicago's Railroad Problem".

refocusing executive compensation on the operating ratio, slashing 15 percent of their intermodal lanes, and targeting an incredibly low sub-60 percent operating ratio by 2026.[46]

A public rail system would allow railroad management to refocus from short-term quarterly profit statements to providing quality services to customers and pursuing profitable traffic growth. This would mean ending the fixation with the operating ratio. Achieving long-term growth will require capital investment and a strong workforce to ensure that our railroads have sufficient capacity to provide frequent, reliable service. A public rail system will also restore service to regions across the country who have seen a constant decline in transportation access because their area is not deemed profitable enough. America deserves better. Under a public rail system, this country can finally get the world-class rail service it deserves, fostering economic development and egalitarian access to transportation from its biggest city to its smallest town.

46. Bill Stephens, "Norfolk Southern prunes intermodal network and puts focus on operating ratio improvement," *Trains* (April 5 2024). https://www.trains.com/trn/news-reviews/news-wire/norfolk-southern-prunes-intermodal-network-and-puts-focus-on-operating-ratio-improvement/.

LONG-TERM PLANNING AND INFRASTRUCTURE INVESTMENT

To understand how the Class I railroads are underinvesting in America's rail system, we can look at a 2007 study, commissioned by the Association of American Railroads (AAR) which examined the infrastructure needs for and investment costs of providing sufficient capacity for freight traffic in 2035. Private railroad companies neither plan their own capital investment long-term to meet future demand nor provide the U.S. DOT (or State DOTs) with sufficient data for public agencies to carry out long-term planning on their behalf.[47] Unlike "national infrastructure needs and cost estimates for the publicly owned highway systems...no comparable, long-term, national estimates [had] been developed for the rail system" before this 2007 study, commissioned by the AAR at the request of a federal transportation policy commission. The study was "the first effort of its kind" and provides an excellent picture of the investments that the Class Is need to—and have failed to—make in the American rail system.[48]

Demand for rail freight is expected to increase 88 percent from 2005 levels by 2035.[49] As figure 8 indicates, barring significant investment, 55 percent of our rail network will

47. Cambridge Systematics Inc., *National Rail Freight Infrastructure Capacity and Investment Study*, 2-6.

48. Cambridge Systematics Inc., *National Rail Freight Infrastructure Capacity and Investment Study*, American Association of Railroads (Washington, D.C., September 2007), 2-6, https://grandavebridge.codot.gov/programs/transitandrail/assets/AARStudy.pdf.

49. Cambridge Systematics Inc., *National Rail Freight Infrastructure Capacity and Investment Study*, 2-5.

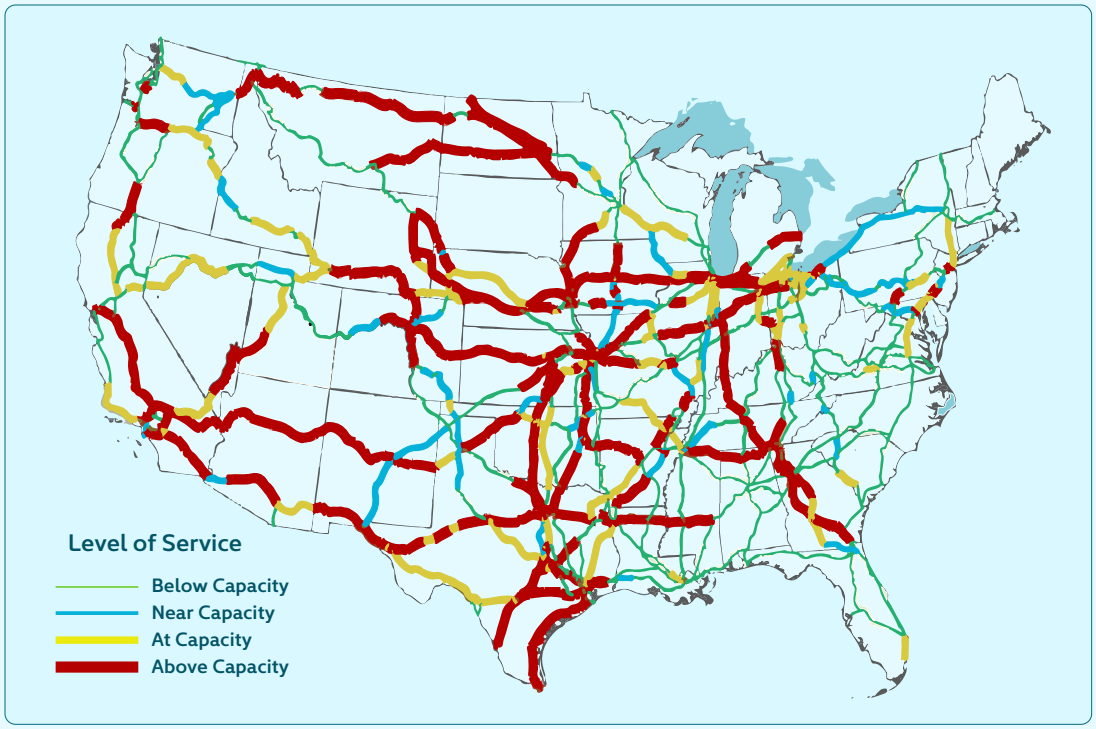

Figure 8. 2035 train volumes compared to 2005 capacity[50]

be at or above capacity with the level of traffic predicted for 2035.[51] The consequences could be disastrous, from further deteriorating service quality and increased train accidents, to pushing new traffic off rail and onto trucks straining our already congested highway system.

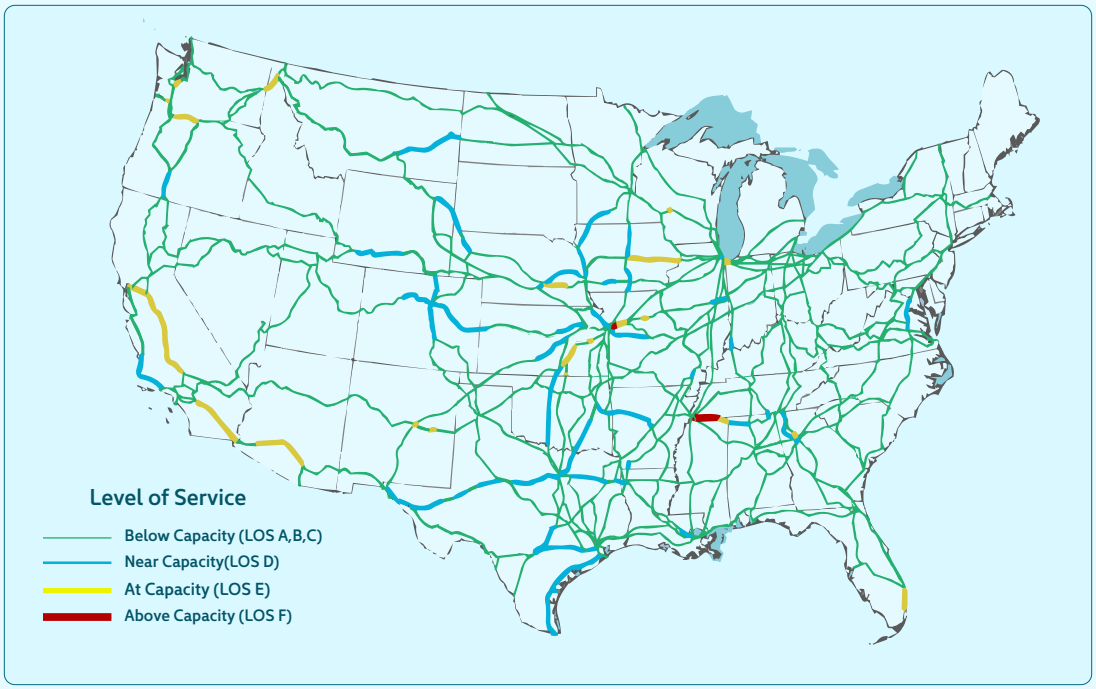

Figure 9. 2005 train volumes compared to 2005 capacity

Avoiding this outcome necessitates significant investment and capacity expansion. The AAR's study examined only the need for capital investment in additional trackage and facilities such as rail yards.[52] It did not include the cost of new locomotives and railcars or the cost of maintaining existing or new trackage. The study provided a minimum estimate to maintain sufficient capacity, as seen in figure 9, with the projected increase in freight traffic. With this focus in mind, the study concluded that $148 billion (in 2007 dollars) in capacity expansion would be required for railroads to meet freight traffic demand in 2035.[53]

When this report was commissioned, Class I railroads were collectively spending around $1.5 billion a year on capacity expansion. To meet the Class Is' estimated $135 billion share of the overall $148 billion in infrastructure investments needed would mean an increase to about $4.8 billion a year over 28 years. At the time, the railroads estimated that they would be able to provide roughly half of that amount—$70 billion—funded by the earnings from traffic growth, with an estimated $26 billion provided by improvements in train productivity reducing capital expenditures elsewhere. The report leaves the balance, $39 billion, to be funded by public-private partnerships or tax incentives—public funds. A sizable chunk, to be sure, but an amount that pales in comparison to federal funding for our public interstate highway system.

In the decade and a half since the AAR study was published, Class Is have failed to make the necessary capital investments, falling short by billions of dollars in capital expenditures and hundreds of miles of track. The two largest Class Is, BNSF and Union Pacific, invested a mere $580 and $584 million, respectively, in capacity expansion in 2022.[54] Union Pacific added only 44 miles of track to its 26,121-mile network (0.17% growth). Canadian Pacific invested an infinitesimally small $81 million in capacity expansion, constructing 17 track miles in 2022.[55]

This rate of investment is far too slow to meet the capacity needs of the U.S. rail network by 2035—let alone to support expanded passenger service and attempt to attract freight traffic back from trucks. In 2010, the AAR pleaded poverty, claiming that the gap between "what railroads can invest in capacity expansion and what should be invested at more than $50 billion."[56] The reality is that railroads can invest much more than they currently are doing; the Wall Street interests that control them simply don't want them to.

50. Cambridge Systematics Inc., *National Rail Freight Infrastructure Capacity and Investment Study*, 4-10 & 5-5.

51. An estimated 25% will be "at capacity" and 30% will be "above capacity."

52. Cambridge Systematics Inc., *National Rail Freight Infrastructure Capacity and Investment Study*, 3-1 & 3-2.

53. Cambridge Systematics Inc., *National Rail Freight Infrastructure Capacity and Investment Study*, section 7.

54. Union Pacific Corporation, *FORM 10-K* - 2022, Securities and Exchange Commission (February 10 2023), 36; BNSF, "BNSF announces plan for 2022 capital investments," news release, February 28, 2022, https://www.bnsf.com/news-media/news-releases/newsrelease.page?relId=bnsf-announces-plan-for-2022-capital-investments.

55. Canadian Pacific, *2022 Annual Report* (2023), 62, https://s21.q4cdn.com/736796105/files/doc_financials/2022/ar/CP_AnnualReport_2022.pdf.

56. Kristen McIntosh, "AAR Executive Discusses Future Prosperity Of Nation's Railroads," *Crossties*, January/February, 2010.

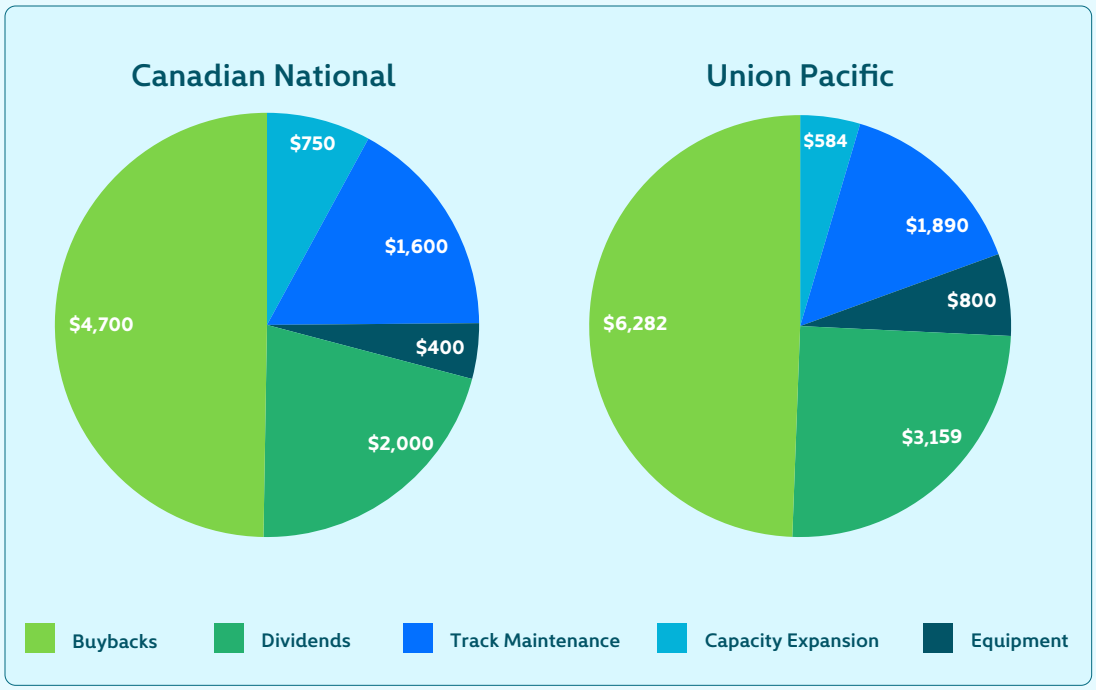

Figure 10. Capital expenditures and shareholder returns, Canadian National and Union Pacific 2022, in millions of U.S. dollars[57]

As figure 10 shows, railroads are spending almost three times as much on stock buybacks and dividends as on maintenance, equipment and capacity expansion combined. Union Pacific alone spent $6.28 billion on share buybacks in 2022—enough money to fully fund capacity expansion for the entire network. Instead of using that money to invest in critical infrastructure improvements, the Class Is have contented themselves to ripping up track and solving capacity issues by driving away customers through bad service.

The Surface Transportation Board calculated that between 2010 and 2020, Class I railroads paid out $196 billion in buybacks and dividends (in 2021 dollars).[58] This is roughly $20 billion more, paid out in 10 years, than the total inflation-adjusted $175 billion (in 2021 dollars) needed for capacity expansion over the 28 years between 2007 and 2035. Despite spending gratuitously on buybacks, Class Is have still availed themselves of federal funding to support their infrastructure investments. CSX, for example, announced $100 million in "major upgrades" to the recently-acquired Pan Am system in New England, which includes $17.5 million in Consolidated Rail Infrastructure and Safety Improvements (CRISI) funding that "the Maine [DOT] obtained to help CSX fund infrastructure improvements."[59]

57. Note: Union Pacific figures exclude $346 million in "technology and other" included in their investing activities. Canadian National groups tech investments with track capacity into one figure. All figures reported in U.S. Dollars. Canadian National, *Annual Report - 2022* (2023), 7; Union Pacific Corporation, *FORM 10-K*-2022, 36.

58. This figure excludes Canadian National and Canadian Pacific. Martin J. Oberman, "STB Chairman Address Before North American Rail Shippers Association" (North American Rail Shippers Association Annual Meeting, September 8 2021).

59. Jeff Stagl, "CSX to continue major upgrades to former Pan Am system in 2024," *RailPrime* (February 26 2024). https://www.progressiverailroading.com/RailPrime/details/CSX-to-continue-major-upgrades-to-former-Pan-Am-system-in-2024--71330.

While it is good to have public funding for infrastructure, it is hypocritical for Class Is to underinvest in capacity expansion and plead poverty to ask for federal funds to support investment, while spending billions upon billions on stock buybacks. Instead of the public subsidizing these corporations' bottom lines, public infrastructure funding would be better spent supporting a public rail system, where the money would wholly benefit the public.

By bringing the railroads under public ownership, we can close the gap in infrastructure investment by re-directing earnings currently spent on stock buybacks and dividends to fund infrastructure improvements. This will not only allow our rail network to meet projected capacity requirements for 2035, but also attract freight back to the rail network from trucking through better, more dependable service.[60] A publicly owned rail network will also be capable of proper long-term planning, ensuring that our railroads can continue to serve the public interest with sufficient capacity for decades to come.

60. The AAR-commissioned study assumed no increase in mode share from trucking. Further investments in capacity and a focus on quality service would be necessary to achieve a mode shift, in addition to meeting projected base-level freight demand.

ELECTRIFICATION AND DECARBONIZATION

Much like planning for capacity expansion, the task of decarbonizing our nation's transportation networks is a one that will require long-range planning, sufficient funding, and national coordination. So far, the Class Is have not shown themselves to be up to the task. Rather than pursuing tried and tested overhead catenary electrification, with known operational and cost benefits, railroads have only dabbled in untested technologies such as battery electric or hydrogen locomotives.

The benefits of overhead catenary electrification are clear. Electrification is important not just for its potential to decarbonize our rail infrastructure, but also for the key operational benefits that come alongside electric traction:

- The cost to buy a new electric locomotive is 20-33 percent less than a diesel locomotive of the same tractive capability.[61]
- The cost to operate electric locomotives is 25-35 percent cheaper than diesels.[62]

61. John W. Barriger III, "Foreward," in When The Steam Railroads Electrified (Indiana University Press, 2002); Bill Moyer, Patrick Mazza, and Solutionary Rail Team, *Solutionary Rail: A people-powered campaign to electrify America's railroads and open corridors to a clean energy future* (Backbone Campaign, 2016), 20.

62. Moyer, Mazza, and Solutionary Rail Team, Solutionary Rail, 20.

- On a per mile basis, maintenance for diesels is three to four times higher than for electric locomotives.[63]
- Electric locomotives also have a much higher utilization rate, breaking down far less frequently, 40 percent less according to some estimates.[64]
- Electric locomotives last two to three times longer than diesel locomotives due to fewer high-wear components.[65]
- Electric locomotives can haul up to three times more freight than diesel locomotives while drawing the same raw power, due to the higher efficiency of direct high voltage electric power.[66]
- As a result of their superior performance and reliability, electrified railroads also require a smaller locomotive fleet to move the same amount of freight.[67]

63. Barriger III, "Foreward."

64. Moyer, Mazza, and Solutionary Rail Team, *Solutionary Rail,* 20; Garry Keenor, *Overhead Line Electrification for Railway*s, 6th ed. (Permanent Way Institution, 2021), 5. https://ocs4rail.com/wp-content/uploads/2022/04/Overhead-Line-Electrification-for-Railways-6th-edition-R2.pdf.

65. Barriger III, "Foreward."

66. Keenor, *Overhead Line Electrification for Railways;* Barriger III, "Foreward."

67. Barriger III, "Foreward."

Electric locomotives have the additional advantage of being able to capture energythrough regenerative breaking and put it back into the grid. Regenerative breaks exist on diesel electric locomotives now, turning the electric traction motors into electricity generators drawing power from the wheels in order to slow the locomotive. On diesel electric locomotives, this energy is vented into the air as wasted heat. With electrification, the power generated by regenerative breaks on downhill mountainous grades can be put directly back into the overhead wires to power other locomotives up the grade.[68]

68. Keenor, *Overhead Line Electrification for Railways,* 86-88.

In the rest of the world, these benefits are understood, and catenary electrification is the gold standard. Countries including China, Russia, Germany, France, Japan, and Ethiopia have electrified the majority of their rail networks. Switzerland's rails are 100 percent electrified and India aims to achieve full electrifications of its rails the end of 2024. Dozens of other countries are currently in the process of installing catenary electrification across their rail networks.

At one time the U.S. was a world leader in railroad electrification, with over 6,300 miles of electrified track at its peak.[69]Unfortunately, a lot of this trackage was discontinuous, with electric locomotives used to haul trains up the steepest mountain grades or through long tunnels. With the advent of diesel locomotives, it became cheaper for companies to tear down wires and switch to fleets of exclusively diesel loco-

69. William D. Middleton, *When The Steam Railroads Electrified,* Rev., 2nd ed. (Bloomington: Indiana University Press, 2001), 412. http://www.loc.gov/catdir/toc/fy031/2001024681.html.

motives, avoiding the cost of adding and removing electric locomotives to accompany trains through tunnels or over steep mountain grades. Today electric locomotives persist in the United States on the Northeast corridor for passenger trains, several commuter rail systems, and on a few short freight lines like the Iowa Traction Railway and Deseret Power Railroad.

Climate change and the need to shift freight from congested highways onto rail have renewed the drive for electrification globally. The United States, dominated by privately-owned Class I railroads, is being left far behind. Rather than invest in catenary electrification, U.S. railroads are merely toying with untested battery and hydrogen technologies. Described as the "world's first 100 percent battery-electric, heavy-haul locomotive," Wabtec's FLXdrive locomotive is only capable of full power output for 30-40 minutes before needing an 8-hour recharge.[70] Hydrogen locomotives are similarly problematic. A pilot project using hydrogen trains for passenger service in Germany found them to be up to 80 percent more expensive to own and operate than electric trains with catenary wires.[71] In addition, hydrogen trains have limited range and low energy density. By contrast, catenary electrification provides locomotives with an infinite range, under wire, and can be seamlessly switched to renewable energy as the grid transitions.

Railroads are pursuing these experimental technologies in order to claim that "a clear technological path [for electrification] has not emerged."[72] This claim is entirely false and flies in the face of U.S. railroad history. Over a century ago in 1918, the director general of the USRA (which controlled the entire railroad system during WWI) was advocating for full electrification, telling the New York Times that "the problem is no longer a technical but a financial one."[73]

This statement is no less true today. Electrification technology has only advanced since 1918, and catenary electrification remains the most efficient method of powering a locomotive. However, the financial problem is equally troubling. The private railroads in the U.S. do not want to invest the capital required to install catenary poles and cables across their networks. Despite the long-term cost savings and operational benefits, the massive short-term cost is too much for private investors focused on quarterly earnings.

70. William C. Vantuono, "FLXdrive 'Electrifies' Pittsburgh," *Railway Age*, September 13, 2021, https://www.railwayage.com/news/flxdrive-electrifies-pittsburgh/; "FLXdrive," Wabtec Corporation, 2023, accessed July 24, 2023, https://www.wabteccorp.com/locomotive/alternative-fuel-locomotives/flxdrive.

71. Leigh Collins, "'Will no longer be considered' | Hydrogen trains up to 80% more expensive than electric options, German state finds," *Hydrogen Insight* (October 20 2022). https://www.hydrogeninsight.com/transport/will-no-longer-be-considered-hydrogen-trains-up-to-80-more-expensive-than-electric-options-german-state-finds/2-1-1338438.

72. Association of American Railroads, "Railroads File Suit Against California Over Untenable Locomotive Rule," news release, June 16, 2023, https://www.aar.org/news/railroads-file-suit-against-california-over-untenable-locomotive-rule/.

73. Eugene L. Huddleston, *Uncle Sam's Locomotives*: *The USRA and the Nation's Railroads* (Indiana University Press, 2002), 108-09..

74. Note: Unlike our contemporary railroads, the Pennsylvania wanted to aggressively push forward with electrification due to its operational benefits and cost savings along it dense east coast corridor. Even during the Great Depression, the electrification project was self-funded until 1932, when the Pennsy received a $27.5 million loan from the Reconstruction Finance Corporation. Middleton, *When The Steam Railroads Electrified*, 318.

The solution then is for the government to fund electrification, as it did with loans to the Pennsylvania Railroad in the 1930s under the New Deal.[74] The federal government is well positioned to fund electrification. It is able to borrow at lower interest rates through Treasury Bonds and invest on a long time scale. The economic justification for electrification is solid. A cost/benefit analysis for electrifying a core 29,000 miles of the U.S. rail network in 1983 estimated the rate of return on electrification to be a generous 19 percent, saving over 50 million barrels of oil a year.[75]

75. This core network includes all lines with traffic equal to 30 million gross ton-miles per route mile or more. C.H. Spenny and G.B. Mott, "Cost/Benefit Evaluation of Electrification of a U.S. Rail Network," *Transportation Research Record*, no. 939 (1983).

Cost estimates for electrification vary, but it will likely run tens of billions to electrify the core U.S. rail network. A significant portion of this cost could be paid for, as discussed in the infrastructure section above, through nearly $20 billion saved annually under public ownership by reinvesting the money that the Class Is presently spend on dividends and stock buybacks. Given the scale of the investment, it is only logical that if the public is to foot the bill that the benefits should accrue to a public asset, in the form of public ownership. Any bonds issued will easily be paid back by the immense cost savings from cheaper electrical operation.

Electrification also presents a colossal engineering and planning challenge that will require national coordination to ensure that catenary is built continuously along key corridors with compatible technical specifications. Both the experience with federal control during WWI and Indian Railways' impressive electrification program demonstrate that the best option for projects of this magnitude is to coordinate them through a unified publicly controlled railroad.[76] National coordination will also be critical to facilitate the co-location of new power transmission lines alongside rail catenary, which will be necessary for decarbonizing the grid.

76. Both of these are discussed in sections below.

COMMUNITY HEALTH AND ENVIRONMENTAL JUSTICE

Trackside communities have an important stake in our rail system that has long gone underappreciated. Railyards are primarily sited in low-income and minority communities. These residents, along with rail workers, bear the brunt of the health risks from high volumes of diesel exhaust and other hazardous waste. Concerns have also been raised nation-

wide over Class I railroads' record length trains parking across grade crossings, cutting off children from their schools and first responders from emergencies. Correcting this environmental injustice and achieving safer communities should be an imperative for railroads. Unfortunately, the behavior of Class I railroads has shown that trackside communities from East Palestine to Los Angeles are a low priority.

To combat harmful diesel emissions from locomotives, the Environmental Protection Agency has issued a series of rules prescribing standards for locomotive emissions in various Tiers based on their build year. The Tiers range from pre-1973 "not classified" (NC) locomotives and Tier 0 which use the dirtiest diesel technology to Tier 4 locomotives produced post-2015 to high emissions standards. EPA regulations require new locomotives to meet Tier 4 standards and for rebuilt locomotives to be improved to a higher emissions standard (i.e. Tier 1 to 1+). Despite these regulations, Class Is have replaced very little of their fleet over the past 10 years and primarily chosen to rebuild existing locomotives. Though this has led to slight improvements, rebuilt locomotives produce much worse emissions than Tier 4 compliant locomotives.[77]

77. Eastern Research Group, *2020 National Emissions Inventory Locomotive Methodology,* Environmental Protection Agency (Environmental Protection Agency, May 19 2022), 4-5, https://www.epa.gov/system/files/documents/2023-01/2020_NEI_Rail_062722.pdf; "Final Rule for Control of Emissions of Air Pollution From Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder," updated May 5, 2023, accessed March 4, 2024, https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-emissions-air-pollution-locomotive.

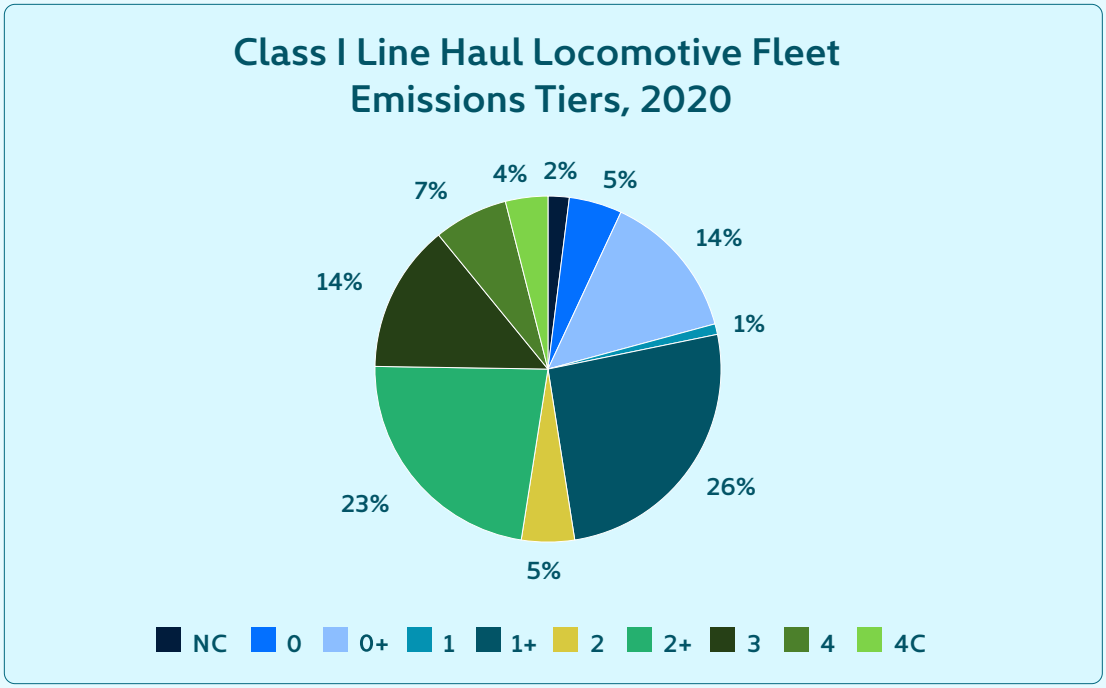

Figure 11. Class I line haul locomotive fleet by EPA tier, 2020[78]

Locomotives below Tier 2 represent more than fifty percent of the current in-use line haul locomotive fleet for Class I railroads. These low tier locomotives emit five-to-eight times

78. Eastern Research Group, *2020 National Emissions Inventory Locomotive Methodology,* 4.

more nitrous oxide (NO_x) and ten-to-twenty times more particulate emissions (PM_{10}/$PM_{2.5}$) compared to Tier 4 compliant locomotives, which represent a mere seven percent of the fleet.[79]

Emissions from Class I line haul locomotives totaled more than 370,000 tons of NOX and more than 18,000 tons of particulate emissions in 2020. Emission factors reduced overall between 2017 and 2020 by around 17 percent, but it should be noted that locomotive activity on the railroad also decreased by 15 percent as a consequence of the pandemic. While Class Is did shift to lower emissions locomotives during this period, it is at a much too slow rate to meet the EPA's goal of preventing 1,100 PM-related premature deaths annually alongside $10 billion in other health benefits by 2030 that it outlined in its 2008 Tier 4 rule.[80]

Despite this slight improvement in emissions from Class I line haul locomotives, 2017 to 2020 saw a reverse trend towards dirtier, lower-tier yard switcher locomotives. This trend occurred alongside an overall decrease in in-service yard switchers, due to the pandemic and "Precision Scheduled Railroading," which has led to the shuttering of numerous railyards around the nation. As demonstrated by figure 11, Class I railroads opted to remove higher tier, cleaner locomotives from yard switching service and replace them with lower tier locomotives, even as the overall number of switchers declined by nearly 200 locomotives.

79. Eastern Research Group, *2020 National Emissions Inventory Locomotive Methodology*, 5.

80. Environmental Protection Agency, "Final Rule for Control of Emissions of Air Pollution From Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder."

81. Eastern Research Group, *2020 National Emissions Inventory Locomotive Methodology*, 20.

82. Yard locomotives emitted 9.79% of Class I emissions and 10.14% of PM_{10}/$PM_{2.5}$ emissions in 2020 according to data from Eastern Research Group, *2020 National Emissions Inventory Locomotive Methodology*.

83. Paul Allen et al., Newark *Community Impacts of Mobile Source Emissions: A Community-Based Participatory Research Analysis* (New Jersey Environmental Justice Alliance, November 2020), https://njeja.org/wp-content/uploads/2021/06/NewarkCommunityImpacts_MJBA.pdf.

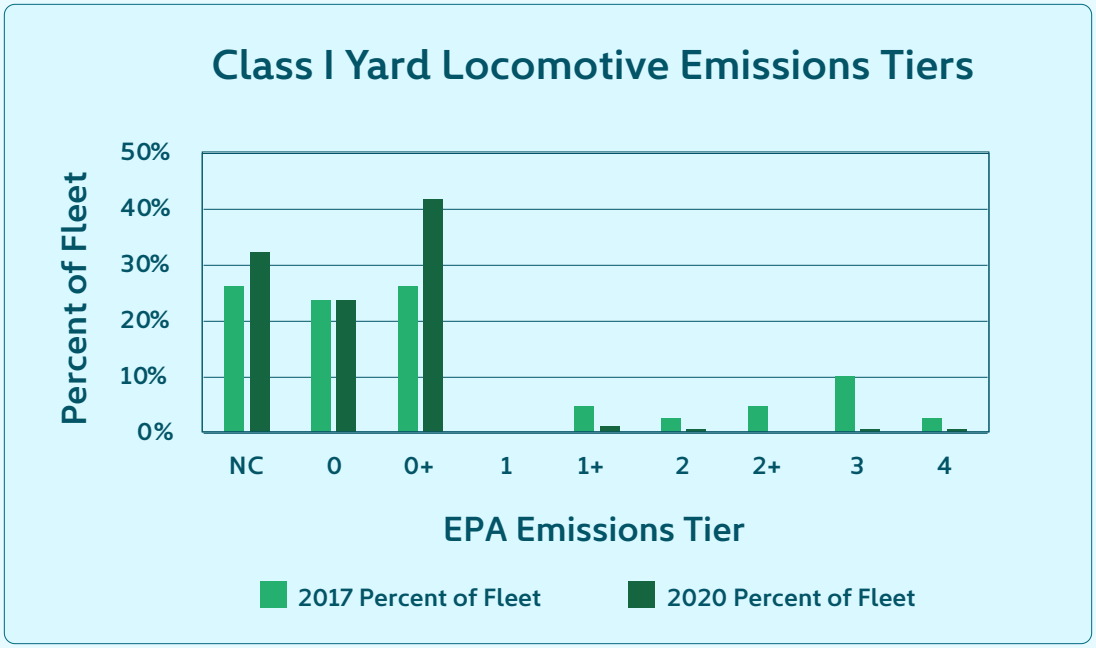

Figure 12. Class I yard locomotive emissions by EPA tier, 2017 and 2020[81]

While these yard locomotives represent only a fraction (14.4%) of Class I fleets and emit a roughly a tenth of their NOX and particulate matter emissions (PM10 and PM2.5), the health impact of yard locomotives is disproportionately large on those living near railyards.[82] The concentration of locomotives within yards leads to dispersion of diesel pollution into surrounding communities, which is linked to an outsized exposure risk for NOX and particulate matter.[83]

Exposure to these diesel pollutants contributes to a risk of cancer for those living near railyards that is 10 times higher than among the general population.[84] Diesel exhaust has been linked to higher risks of lung cancer among rail workers.[85] The pollution from diesel locomotives contributes to higher rates of asthma, heart disease, and other maladies in predominantly low income, minority, and rural communities that already lack equitable access to healthcare.[86] Eliminating this source of pollution has the potential to prevent thousands of premature deaths and hospitalizations annually.[87]

The locomotive technology already exists to alleviate this pollution risk and achieve more sustainable freight transportation. Yet Class Is have moved in the opposite direction, claiming that zero emissions technology does not exist while employing older, more polluting locomotives in yards. For the health and safety of communities near tracks and railyards, an urgent investment in cleaner locomotives is needed. This investment is possible under public ownership, where the public interest is centered, but remains distant as long as the Class Is continue to prioritize short-term profit over community health.

In addition to concerns over pollution from locomotives, trackside communities have to reckon with the impact of increasingly long trains. The average train length is now well over a mile and over one in four trains is nearly two miles long, according to one Class I railroad.[88] These long trains raise a number of safety concerns, though the FRA claims it has no conclusive evidence on their safety because the Class Is refuse to share data with the administration.[89] Despite this lack of regulatory clarity, a recent academic analysis found a 24 percent higher derailment risk for 200 car trains[90] compared to 50 car trains. Even aside from derailment risk, long trains pose serious dangers to the communities they pass through when railroads choose to park them in the middle of town blocking road crossings for a mile or more.

84. Andrea Hricko et al., "Global Trade, Local Impacts: Lessons from California on Health Impacts and Environmental Justice Concerns for Residents Living near Freight Rail Yards," *International Journal of Environmental Research and Public Health* 11, no. 2 (2014), https://doi.org/10.3390/ijerph110201914.

85. E. Garshick et al., "Lung cancer in railroad workers exposed to diesel exhaust," *Environ Health Perspect* 112, no. 15 (Nov 2004), https://doi.org/10.1289/ehp.7195, https://www.ncbi.nlm.nih.gov/pubmed/15531439.

86. Moving Forward Network, "Phase 3 Greenhouse Gas Rule Public Comments," (June 16 2023), Public Comment. https://www.movingforwardnetwork.com/wp-content/uploads/2023/07/MFN_Comments_Rail-and-Locomotive-on-Greenhouse-Gas-Phase-3-Rule-Comment.pdf.

87. Environmental Protection Agency, "Final Rule for Control of Emissions of Air Pollution From Locomotive Engines and Marine Compression-Ignition Engines Less Than 30 Liters per Cylinder."; California Air Resources Board, "CARB passes a new In-Use Locomotive Regulation estimated to yield over $32 billion in health benefits," news release, April 27, 2023, https://ww2.arb.ca.gov/news/carb-passes-new-use-locomotive-regulation-estimated-yield-over-32-billion-health-benefits-0.

88. Government Accountability Office, *Information on Precision-Scheduled Railroading*, 15-16.

89. Schwartz et al., "The True Dangers of Long Trains."

90. Madsen et al., "The relationship between freight train length and the risk of derailment."

The issue of blocked crossings is incredibly pressing and has only grown in recent years along with average train lengths. In many towns and cities, trains routinely block grade crossings, preventing emergency vehicles from passing for hours on end. Children are forced to choose between making an incredibly dangerous climb over stopped railcars or not attending school.[91] Blocked crossings are a representation of Class I railroads' prioritization of their operating ratios over community safety. Many instances of blocked crossings could be avoided by running shorter consists or investing in longer rail sidings so that trains could park on them, rather than on city streets.

Trackside community members are important stakeholders whose lives are directly impacted by decisions over capital investment and operations. Communities near rail yards face a battery of health risks, which alone is reason enough for them to have a role in governing our railroads, not to mention blocked crossings, noise pollution, fallout from derailments, and other impacts. The idea of community involvement in railroad governance is incompatible with our present system of private railroad ownership but sits at the core of a democratically-managed public railroad system. Concrete improvements are also achievable under public ownership: investments in cleaner locomotives, electrification, longer sidings, and safe operation are all important measures that can be taken to allow railroads to achieve a sustainable mode shift without contributing to further environmental injustice.

91. Topher Sanders and Dan Schwartz, "As Rail Profits Soar, Blocked Crossings Force Kids to Crawl Under Trains to Get to School," *ProPublica*, April 26, 2023, https://www.propublica.org/article/trains-crossing-blocked-kids-norfolk-southern.

REVIVING PASSENGER SERVICE

Private freight railroads represent one of the greatest impediments to the restoration of passenger rail in America. Nearly every time that Amtrak seeks to restore or increase service on a passenger route where a freight railroad owns the tracks (and the vast majority of Amtrak's network operates over Class I tracks) the freight railroad demand tens to hundreds of millions of dollars in improvements before allowing Amtrak to run passenger service. While these improvements are in many cases necessary, they are only required because of the Class Is own underinvestment in infrastructure and insistence on running long, cumbersome unscheduled trains.

It must be remembered that a century ago, many of these same rail lines hosted dozens of passenger trains per day, mixed in among freight traffic, often with faster schedules than they have today. In the name of cost cutting, the freight railroads have ripped up much of the double trackage that allowed for passenger service decades ago. Without double trackage, trains must fit into passing sidings in order to pass yet the Class Is have failed to extend many of their passing sidings long freight trains, which forces shorter passenger trains to wait on sidings, despite their legal priority. These factors have left Amtrak and the American taxpayer on the hook for improvements to freight railroads' infrastructure to restore capacity that was once there.

There is perhaps no better example of the impediment freight railroads represent to passenger service in this country than the 20-year odyssey to restore passenger service between New Orleans and Mobile. After Hurricane Katrina in 2005, Amtrak suspended its Sunset Limited route east of New Orleans because of heavy damage to the track. The tracks between New Orleans and Orlando were repaired within a year, but CSX and Norfolk Southern refused to allow Amtrak access to their tracks to restore service. CSX claimed that $2.3 billion—more than double CSX's $1.1 billion capital expenditure for its entire network—was needed to make improvements before Amtrak could operate one train every 12 hours along the corridor.[92]

92. John Sharp, "CSX, Southern Rail Commission battle it out over costs to restore passenger rail to Gulf Coast," AL.com (July 20 2017). https://www.al.com/news/mobile/2017/07/csx_southern_rail_commission_b.html.

93. "Making the Case for Intermodal Transportation in the Gulf Coast Region | Rail Passengers Association | Washington, DC," accessed June 21, 2024, https://www.railpassengers.org/happening-now/news/blog/making-the-case-for-intermodal-transportation-in-the-gulf-coast-region/.

Figure 13. Suspended portion of the Sunset Limited, between New Orleans, Jacksonville, and Orlando[93]

This obstructionism has meant that as of 2024, service has yet to be restored east of New Orleans, though New Orleans-Mobile service is planned to begin later this year after more than $200 million of federal investment in CSX's infrastructure.[94] In 1965, CSX's predecessor the Louisville and Nashville operated no fewer than a dozen daily passenger trains across the route between New Orleans and Orlando.[95]

Freight railroads cause further issues for passenger services in operation by denying Amtrak the preference in dispatching that it is guaranteed under federal law. This preference is enshrined in the Amtrak Improvement Act of 1973, which states: Except in an emergency, intercity and commuter rail passenger transportation provided by or for Amtrak has preference over freight transportation in using a rail line, junction, or crossing.

Despite this statutory requirement for freight railroads to give preference to passenger trains, in fiscal year 2023, freight train interference accounted for 945,911 minutes of delay to Amtrak trains. Put another way, that is 657 straight days of delays. Freight trains caused one and three-quarters days of delay to Amtrak trains for each day of the year. Freight train interference was the most significant cause of delay to Amtrak across every quarter of 2023, representing between 14 and 18 percent of total delay minutes.[96]

In addition to freight train interference, host railroads—predominantly Class Is—are responsible for a slew of other delays, the second largest category of which is slow orders.[97] Slow orders are implemented because of poor track quality or other safety concerns, often a symptom of Class Is' cost cutting and inadequate maintenance. As is clearly demonstrated by figure 14, freight railroads are responsible for an overwhelming majority of delays to passenger trains across the United States.[98] In 2023, host railroads were responsible for the equivalent of more than 2,238 days of delay to Amtrak trains.

The Class Is' failure to maintain their own trackage creates risks for rail passengers. In a recent example, the National Transportation Safety Board determined a 2021 Amtrak derailment that took the lives of three passengers and injured 49 others was the fault of BNSF's poor track maintenance. Worse still, an inspector had noticed defects in the track joints two days before the inspection but hadn't stopped to take a

94. Steve Davis, "Final grant clears the way to restore Gulf Coast passenger rail service," *T4AMERICA BLOG, Transportation for America*, 2023, https://t4america.org/2023/10/03/final-grant-clears-the-way-to-restore-gulf-coast-passenger-rail-service/.

95. Louisville and Nashville Railroad, "Passenger Train Time Tables," (December 18 1965). https://streamlinermemories.info/South/L&N65TT.pdf.

96. Delay minutes due to freight train interference Q1: 252,957; Q2: 234110; Q3: 240,886; Q4: 217,958. Federal Railroad Administration, *Quarterly Reports on the Performance and Service Quality of Intercity Passenger Train Operations*, Q1-Q4 2023

97. Federal Railroad Administration, *Quarterly Report on the Performance and Service Quality of Intercity Passenger Train Operations: Covering the Quarter Ending September 2023* (Fourth Quarter of Fiscal Year 2023), U.S. Department of Transportation (2023), 6, https://railroads.dot.gov/sites/fra.dot.gov/files/2024-01/FY23%20Q4%20Service%20Quality%20Report_r1_PDFa.pdf.

98. Amtrak, "The Truth About Amtrak's Legal Right to Preference." https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/HostRailroadReports/mythbusters-enforcing-amtraks-legal-right-to-preference.pdf.

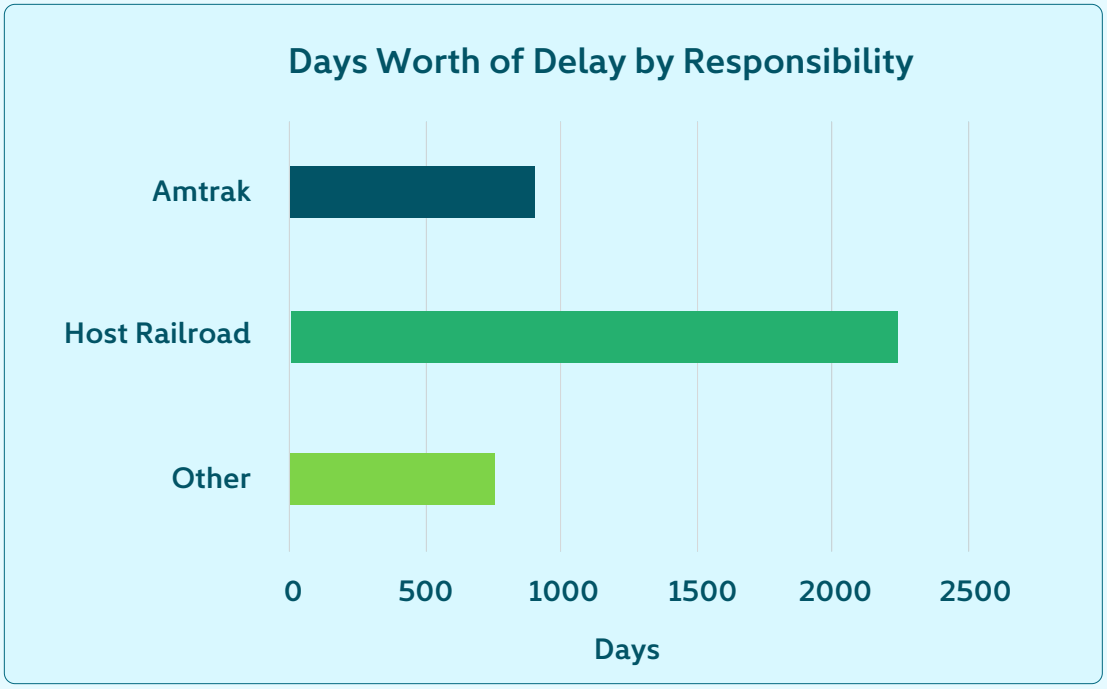

Figure 14. Days of passenger train delay by responsibility, 2023[100]

closer look that might have prevented the incident. This incident traces back to BNSF's cost cutting and understaffing, as the inspector responsible for the corridor had been working an average of 13 hours a day over the four weeks prior to the crash.[99]

Private railroads' failure to invest in their own infrastructure has also led to the cancellation of entire Amtrak trains. In 2023 and 2024, Canadian National imposed a 10-mph speed restriction on its New York trackage in temperatures over 86 degrees, a symptom of poorly maintained ballast and ties. This caused Amtrak to suspend Adirondack service north of Albany.[101] In another instance, Amtrak went to the Supreme Court to assert its power to condemn track under eminent domain from the Boston and Maine Railroad because its track was too poorly maintained for passenger service to safely operate over.[102]

Almost all of these ills that freight railroads pose to passenger rail could be easily addressed by a publicly owned rail system. Routine preventative maintenance coupled with a focus on high quality infrastructure rather than short-term profit margins should make passenger trains safer and faster. Reducing delays to Amtrak trains can be achieved by improvements in infrastructure, such as double tracking busy corridors, and by giving Amtrak trains the priority to which they are entitled under federal law. A return to shorter, scheduled freight

99. Amy Beth Hanson and Sam Metz, "Investigators say poor track conditions caused a 2021 Amtrak derailment in Montana that killed three," *Associated Press*, July 27, 2023, https://apnews.com/article/amtrak-derailment-montana-b5901eee31b544496edc8a5c2664aeb1.

100. Federal Railroad Administration, *Quarterly Reports on the Performance and Service Quality of Intercity Passenger Train Operations*, Q1-Q4 2023.

101. Bob Johnston, "Amtrak abruptly suspends 'Adirondack' after CN imposes heat restriction," *Trains* (February 4 2024). https://www.trains.com/trn/news-reviews/news-wire/amtrak-abruptly-suspends-adirondack-after-cn-imposes-heat-restriction/.

102. *National Railroad Passenger Corporation v. Boston & Maine Corp.*, 503 U.S. 407 (1992).

trains as a component of higher quality service to customers would also be conducive to better passenger service. Under public ownership, America will be able to experience a true passenger rail renaissance.

HISTORY OF PUBLIC RAIL IN AMERICA

Public ownership and support have been central to railroads since the birth of railroading in America. This section will delve into the long and complicated history of public ownership in the rail industry from the first common carrier railroad in the United States to the quasi-nationalization of the Northeast's entire rail network under Conrail. Railroads have long been seen as critical transportation links and servants of the public interest, as such public ownership of the railroads is far from a novel concept.

THE EARLY DAYS AND STATE-CHARTERED RAILROADS IN AMERICA

In the early days of rail, nearly every railroad was built with significant public support, if not directly by a city or state. Railroads were seen as an integral public good, key to maintaining trade links in an ever accelerating and expanding economy. Cities competed to provide the best routes between various regions. Publicly owned and funded railroads were a source of pride for citizens.[103] Furthermore, private investors were simply unwilling to bear the risk of supporting such a new and uncertain industry, requiring government to take the lead in railroad development. Government investment was seen as appropriate because railroads were understood as an improvement to benefit the public rather than a small group of investors.[104]

One of the first intercity common carrier railroads, built to keep Baltimore competitive in the trade between the Atlantic and expanding western frontier, the Baltimore and Ohio Railroad (B&O) was chartered by the state with fifty percent government ownership.[105] The city of Baltimore would continue to support the B&O, along with other railroads such as the Western Maryland, throughout the rest of the 19th century.[106] Though not all municipally-supported railroads were as famous as the B&O, hundreds of other municipali-

103. Allen W. Trelease, "The Passive Voice: The State and the North Carolina Railroad, 1849-1871," *The North Carolina Historical Review* 61, no. 2 (1984): 175, http://www.jstor.org/stable/23518751; Carter Goodrich, "Local Government Planning of Internal Improvements," *Political Science Quarterly* 66, no. 3 (1951): 432, https://doi.org/10.2307/2145119, http://www.jstor.org/stable/2145119.

104. Milton S. Heath, "North American Railroads: Public Railroad Construction and the Development of Private Enterprise in the South before 1861," *The Journal of Economic History* 10 (1950): 48, http://www.jstor.org/stable/2113926.

105. John F. Stover, *History of the Baltimore and Ohio Railroad* (West Lafayette, Ind.: Purdue University Press, 1987), 1-18.

ties similarly provided aid to railroads during the early period of their development.[107] Even the well-known Pennsylvania Railroad, once the largest corporation in the world, received the majority of its initial funding from the cities of Philadelphia and Pittsburgh.[108]

In the South, which had less access to private capital than northern industrial regions, city and state governments provided over 55 percent of construction costs for southern railroads built prior to the Civil War.[109] This value doesn't even include grants of right-of-way or other support, leading its originator to conclude that "this estimate attributes to private investors, inferentially at least, a greater role than is warranted," underscoring the critical importance of public investment to railroad development.[110]

Two broad models of state support from the period have been identified. The first, exemplified by Georgia, involved significant state support to primary main lines, with cities and counties encouraged to build local branch lines.[111] This approach allowed the state to shape the overall rail network. Major rail lines were built by the state or by a corporation in which the state was the sole or controlling owner. The most famous example in Georgia is the Western & Atlantic Railroad, built and owned by the state, spanning from Atlanta to Chattanooga.[112] This rail line is still owned by the State of Georgia and leased to CSX.[113]

The second model, exemplified by Virginia, was a more balanced approach of providing support to all rail lines within the state. Initially this consisted of an offer for the state to purchase two-fifths of the shares in any railroad. Finding inadequate private interest in subscribing to the full three-fifths remaining, local communities convinced the state legislature to up its commitment to three-fifths interest.[114] Consequently, the state was the majority and controlling shareholder in nearly all railroads in Virginia for a large portion of the 19th century. Yet, stock subscription alone was not sufficient to induce private investors to fund the railroad construction and many states were induced to further provide loans; Virginia provided around $5 million in loan support—a hefty sum for the day.[115]

These models are certainly not all encompassing, and public support for railroads occurred in a variety of other forms throughout the 19th century. One of the most unique pub-

106. Goodrich, "Local Government Planning of Internal Improvements," 435.

107. Goodrich, "Local Government Planning of Internal Improvements."

108. Albert J. Churella, *The Pennsylvania Railroad, Volume 1: Building an Empire, 1846-1917* (Philadelphia: University of Pennsylvania Press, 2012), x-xiv.

109. Trelease, "The Passive Voice: The State and the North Carolina Railroad, 1849-1871," 174; Heath, "North American Railroads: Public Railroad Construction and the Development of Private Enterprise in the South before 1861," 43.

110. Heath, "North American Railroads: Public Railroad Construction and the Development of Private Enterprise in the South before 1861," 42-43.

111. Heath, "North American Railroads: Public Railroad Construction and the Development of Private Enterprise in the South before 1861," 49-50.

112. Frederick B. Gates, "The Impact of the Western & Atlantic Railroad on the Development of the Georgia Upcountry, 1840-1860," *The Georgia Historical Quarterly* 91, no. 2 (2007), http://www.jstor.org/stable/40584996.

113. Surface Transportation Board, CSX Transportation, Inc.-Lease-Western and Atlantic Railroad, 83 FR 58807 (Federal Register, 2018).

114. Heath, "North American Railroads: Public Railroad Construction and the Development of Private Enterprise in the South before 1861," 50.

115. Heath, "North American Railroads: Public Railroad Construction and the Development of Private Enterprise in the South before 1861," 50.

licly owned railroads arose following the Civil War. After Ohio banned cities from investing in joint stock companies, Cincinnati chose to build a railroad on its own.[116] The citizens of Cincinnati voted overwhelmingly in 1869 in favor of constructing the Cincinnati Southern Railway, funded by municipally-issued bonds. By 1880, the line had reached 337 miles south to its terminus in Chattanooga.[117] The railway remained owned by Cincinnati until March 2024, when it was sold to longtime lessee Norfolk Southern after a hard-fought campaign to keep it under public ownership.

116. "Historical Timeline," Cincinnati Southern Railway, 2009, accessed June 16, 2023, https://cincinnatisouthernrailway.org/about/historical-timeline.php.

117. Cincinnati Southern Railway, "Historical Timeline."

THE CIVIL WAR

Railroads became a vitally important component of military strategy during the Civil War, shipping troops and supplies over long distances much faster than previous modes of transport. Because of the critical role of railroad movements to military strategy, the U.S. military sought to guarantee their railroad traffic would be prioritized. This coordination faced some initial resistance from the management of privately owned rail lines.[118]

118. Cristopher R. Gabel, *Railroad Generalship: Foundations of Civil War Strategy* (Combat Studies Institute, 1997), 12-13. https://www.armyupress.army.mil/Portals/7/combat-studies-institute/csi-books/gabel4.pdf.

119. TImage from the U.S. Signal Corps, digitized: https://penelope.uchicago.edu/Thayer/E/Journals/JAMHF/2/2/Military_Railroads*.html1 (1987): 52, http://www.jstor.org/stable/20092074.

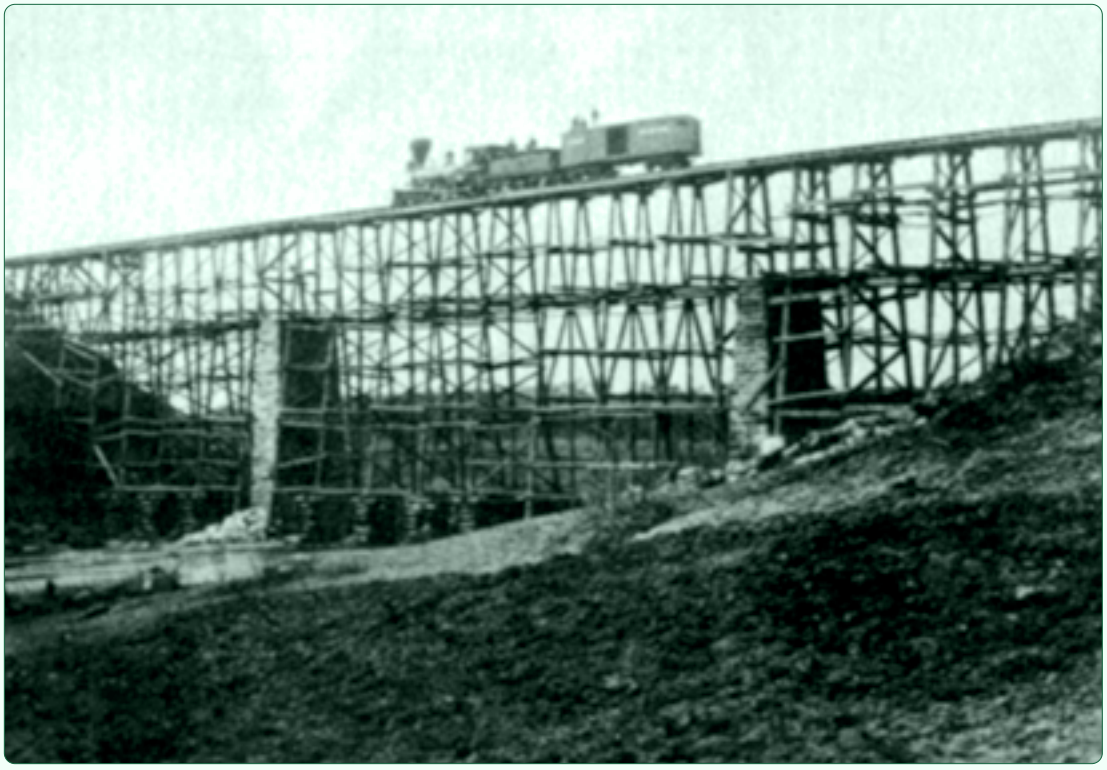

Image 1. USMRR Constructed Bridge over Potomoc Creek[119]

To remedy this, on January 31, 1862, Congress enacted a law that enabled the president to seize and operate any railroad or telegraph line for the duration of the war, as required by public safety.[120] The Act also allowed the establishment of the United States Military Railroads (USMRR), granting the Secretary of War purview over all troop, munitions, and equipment transportation throughout the country.

In practice, the Union tended to allow private railroads to continue their operations, as long as they cooperated with the prioritization of military transportation.[121] Railroads near the war's front lines and captured Confederate railroads were put under the direct control of the USMRR, which repaired and operated them in support of advancing armies.[122] By the end of the war, the USMRR operated 2,105 miles of track with 419 locomotives and 6,330 railcars, making it the larger than any pre-war railroad.[123]

Despite the USMRR's immense size, it was not a single unified network. The Western and Virginia divisions operated almost independently from each other. Furthermore, at the time, most Southern railroads were broad gauge and as such their rolling stock was incompatible with Northern railroads' standard gauge. This created a break in gauge that left the railroads disjointed and required transferring entire shipments between trains.[124] On several occasions, the USMRR took it upon itself to remedy this break of gauge by shifting tracks under its control to standard gauge (4 foot, 8.5 inches).[125] In the decades after the Civil War and the dissolution of the USMRR, railroads nationwide would definitively shift to standard gauge because of the marked benefits of continuous connections.

120. The formal title of this law is "An Act to authorize the President of the United States in certain Cases to take Possession of Railroad and Telegraph Lines, and for other Purposes." John L. Blackman, "The Seizure of the Reading Railroad in 1864," *The Pennsylvania Magazine of History and Biography* 111, no. 1 (1987): 52, http://www.jstor.org/stable/20092074.

121. Gabel, *Railroad Generalship: Foundations of Civil War Strategy*, 13-14.

122. Gabel, *Railroad Generalship: Foundations of Civil War Strategy*, 19-21.

123. E. G. Campbell, "THE UNITED STATES MILITARY RAILROADS, 1862-1865: War Time Operation and Maintenance," *Journal of the American Military History Foundation* 2, no. 2 (Summer 1938): 89.

124. Douglas J. Puffert, "The Standardization of Track Gauge on North American Railways, 1830-1890," *The Journal of Economic History* 60, no. 4 (2000), http://www.jstor.org/stable/2698082.

125. Campbell, "THE UNITED STATES MILITARY RAILROADS, 1862-1865," 77.

FEDERAL LAND GRANTS AND THE TRANSCONTINENTAL RAILROADS

During the second half of the 19th century, federal and state governments gave away vast swaths of public land for the construction of railroads, primarily in the West. A total of 130.4 million acres of public land was directly granted to railroads from the federal government, in addition to 48.9 million acres from nine state governments.[126] Prior to 1862, land grants were made to states, who then transferred the land

126. David Maldwyn Ellis, "Railroad Land Grant Rates, 1850-1945," *The Journal of Land & Public Utility Economics* 21, no. 3 (1945): 207-09, https://doi.org/10.2307/3158889, http://www.jstor.org/stable/3158889.

to railroad companies; beginning with the Pacific Railway Act of 1862, the federal Government granted land directly to the railroads, with the largest amounts going to the four trans-continental railroads.[127]

127. Ellis, "Railroad Land Grant Rates, 1850-1945," 208-09.

These land grants varied in detail but generally included an easement for the right-of-way itself and land to either ride of the railroad in a checkerboard pattern, to be sold to help pay for construction. In total, more than 179 million acres of public land were given to railroad companies, an area larger than the State of Texas. Today, that land would be worth tens of trillions of dollars. Additionally, the government provided subsidized financing to aid the construction of many railroads that received land grants. For example, railroads constructed pursuant to The Pacific Railway Act received 30-year treasury bonds at an interest rate of 6 percent to fund construction.[128]

128. United States Congress (37th : 1861-1863), *Public Laws of The Thirty-Seventh Congress of The United States vol. XII* (Boston: Little, Brown, and Company, 1861), 492-93. https://tile.loc.gov/storage-services/service/ll/llsl//llsl-c37/llsl-c37.pdf.

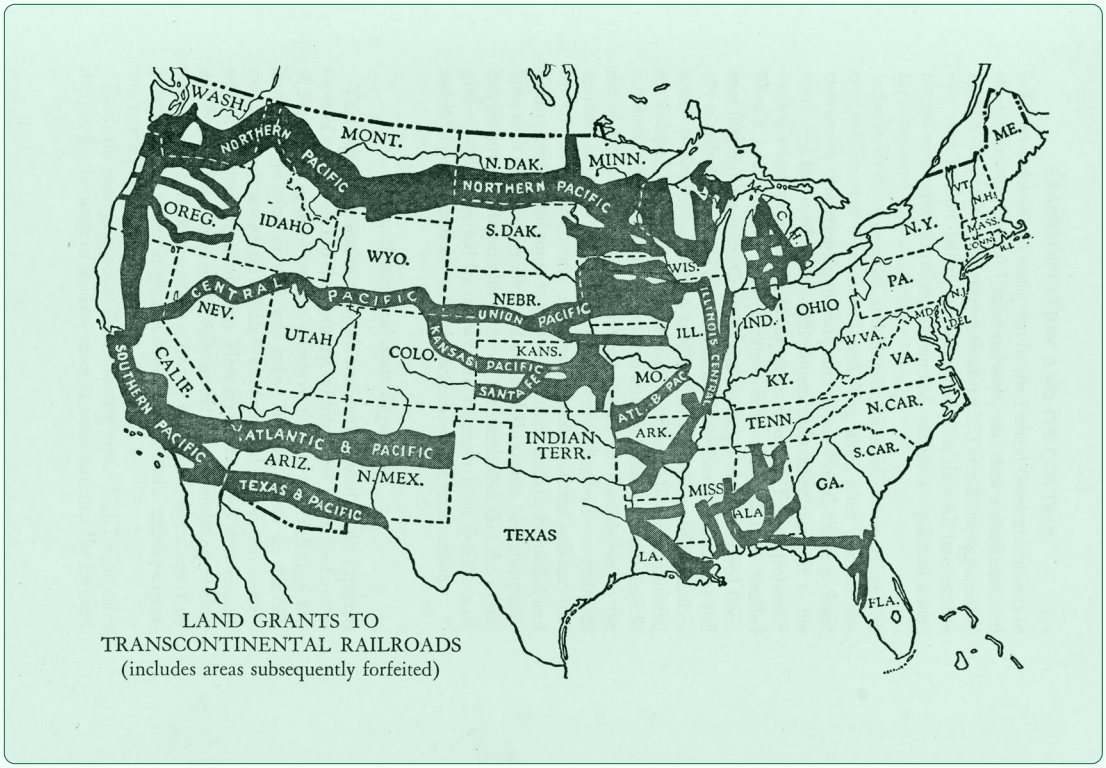

Image 2. Map of railroad land grants[129]

As with the earlier public investment in the very first railroad companies in the 1830s-1850s, the land grants were provided with an understanding that the railroads they enabled would primarily serve the public interest. In a Congressional debate over the General Railroad Right of Way Act of 1875, it was explicitly mentioned that the act was not "'for the benefit of railroad companies' but rather 'for the benefit of the public.'" Railroads were considered "public highways" and, as such,

expected to provide services to the public.[130] To guarantee that land grant railroads would serve the public interest, Congress wrote in the 1862 Pacific Railway Act that: "...the object of this act [is] to promote the public interest and welfare by the construction of said rail road and telegraph line" and reserved Congress the right to "add to, alter, amend, or repeal this act" at any time.[131]

One benefit that railroads were required to provide in exchange for these substantial land grants and subsidized loans was preferential treatment for government shipments of mail, troops, military supplies, and "public stores."[132] The majority of land grants also included clauses that required the government's shipments to be carried at a significant discount to normal rates. In some cases, such as with the Illinois Central, railroads were expected to provide free transportation for any government shipment.

While the rate concessions varied between railroads, through equalization agreements, the government eventually came to receive a 50 percent discount on nearly all shipments, even on non-land grant railroads.[133] In the original grants, these rate concessions were intended to endure in perpetuity. However, railroads fought to eliminate government rate concession for decades, arguing that they undermined rail company's financial stability. By the time of World War II, these rate concessions were saving the government hundreds of millions of dollars in shipping costs. At the same time, the consensus began to shift towards a repeal of rate concessions, and the House passed a bill to eliminate them. [134]

The enduring legacy of the land grant railroads includes the rights-of-way under thousands of miles of U.S. railroads in which the federal government retains a reversionary interest of ownership and control. Though the nature of this interest has been debated in the courts over the past century, there is a compelling case that every railroad that sits on a right-of-way granted from Congress merely possesses an easement over public land.[135] Furthermore, Congress reserved the right to "add to, alter, amend" the terms of its land grants. Ultimately, these lands were given under a promise of providing a "public highway" operated in the public interest, a deal that today's Class Is have inherited along with their predecessors' easements. One might argue that the Class Is failed to live up to this deal and that perhaps it is time for Congress to retake control of our public rights-of-way.

129. Note: This image is not a literal depiction of land grant territories, many of the land grants were made in a checkerboard pattern and the scale is not exact; it is based on an earlier map entitled "How the public domain was squandered" from 1884. This image from Samuel Eliot Morison and Henry Steele Commager's *The Growth of the American Republic.* Archived and digitized within the P.J. Mode collection of persuasive cartography, #8548. Division of Rare and Manuscript Collections, Cornell University Library.

130. Darwin P. Roberts, "The Legal History of Federally Granted Railroad Rights-of-Way and the Myth of Congress's "1871 Shift"," *University of Colorado Law Review* 82, no. 1 (2011): 146.

131. Roberts, "The Legal History of Federally Granted Railroad Rights-of-Way," 125.

132. United States Congress (37th : 1861-1863), *Public Laws of The Thirty-Seventh Congress of The United States XII*, 493; Ellis, "Railroad Land Grant Rates, 1850-1945."

133. Ellis, "Railroad Land Grant Rates, 1850-1945," 211-14.

134. Ellis, "Railroad Land Grant Rates, 1850-1945."

135. Roberts, "The Legal History of Federally Granted Railroad Rights-of-Way."

WORLD WAR ONE ERA NATIONALIZATION

The United States' entry into World War One brought a massive spike in rail traffic. The enormous volume of troops and supplies that needed to be brought to the East Coast for shipment to Europe quickly led to bottlenecks and delays.[136] Private railroads attempted to resolve wartime challenges through the creation of the Railroads' War Board and voluntary cooperation between lines.[137]

However, these efforts failed for numerous reasons. The sheer number of Class Is, 181 at the time, made coordination difficult.[138] Private railroads were also unwilling to fully pool their rolling stock and other resources, despite a national shortage of cars and locomotives. Railroads also ran into difficulty prioritizing service over profit, and managers refused to divert traffic onto other rail lines even when it would have reduced congestion, because they didn't want to lose the revenue to a competitor.[139]

To resolve these difficulties, on December 26, 1917, President Wilson signed a proclamation that would unify the nation's railroads under federal control by the United States Railroad Administration (USRA).[140] Congress followed with legislation in March 1918 that laid out the structure of the operations and outlined the rent to be paid to railroad companies for use of their property.

Federal control during WWI led to numerous operational changes that resolved the major problems of coordination and equipment shortages. For one, national unification allowed hundreds of locomotives to be diverted from less-busy lines to clogged Eastern lines to boost capacity. Additionally, repairs to cars and locomotives took place at the nearest available shop, rather than at shops belonging to their home railroad, since each railroads' facilities were at the disposal of the USRA. This change resulted in a 24 percent increase in locomotive repairs.[141] Railroad cars were properly pooled, which markedly increased their utilization rates and improved traffic flow. Federal Control realized yet other economies of scale by introducing 12 standardized locomotive designs, saving on maintenance cost and facilitating mass production, benefits that led many of these designs to survive long after the war.[142]

136. Walker D. Hines, *War History of American Railroads*, Economic and Social History of the World War American series, (New Haven, London: Yale University Press; H. Milford, Oxford University Press, for the Carnegie Endowment for International Peace: Division of Economics and History, 1928), 10-21.

137. Huddleston, *Uncle Sam's Locomotives*, 2-3.

138. At the time, Class Is were railroads earning over $1 million in revenue a year. Walker D. Hines, "The Director-General's Position," *The Nation*, 1919.

139. K. Austin Kerr, American Railroad Politics 1914-1920: *Rates, Wages, and Efficiency* (University of Pittsburgh Press, 1968), 57.

140. Hines, *War History of American Railroads*, 22.

141. Hines, *War History of American Railroads*, 33-36.

142. Huddleston, *Uncle Sam's Locomotives.*

Along with achieving operational improvements, the USRA committed to non-interference in unionization drives, which led to the organization of hundreds of thousands of previously unorganized non-operating employees on the railroads. The USRA also granted improvements to wages and conditions as part of ensuring labor's cooperation in the war effort.[143]

143. Kerr, *American Railroad Politics*, 72-127.

THE PLUMB PLAN AND POST-WWI CAMPAIGNS FOR PUBLIC CONTROL

Following the end of World War One, a debate emerged about whether the railroads should be returned to private operation or be transitioned to permanent public ownership. While several proposals existed at the time, by far the most *prominent was the Plumb Plan, proposed by Glenn E. Plumb,* who served as general counsel to America's rail unions.

The Plumb Plan entailed the federal government issuing bonds to buy out the railroads at their "actual value"—as opposed to the inflated value of watered stock. The railroads would then be operated by an independent, federally chartered corporation "not for profit, but exclusively for service," which would lease the underlying rail infrastructure from the federal government.[144]

144. Plumb and Roylance, *Industrial Democracy*, 196-200.

This public corporation was to be democratically managed—overseen by a board of directors with appointees representing labor, management, and the public in equal proportion.[145] Shipping rates would be set by the Interstate Commerce Commission to cover all operating costs as well as necessary infrastructure reinvestment and bond repayment. Any surplus earnings from efficiency improvements, as Plumb expected from a unified system, would be disbursed: one-half as dividends to management and workers, one-half to the public in the form of infrastructure investments and lower freight rates (which would benefit consumers by lowering the cost of goods).[146]

145. Glenn E. Plumb, Labor's plan for government ownership and democracy in the operation of the railroads, (Washington, D.C.: 1919), 8-9; Plumb and Roylance, Industrial Democracy, 198; Kerr, *American Railroad Politics*, 163.v

146. Plumb and Roylance, *Industrial Democracy*, 198-200.

This proposal for public ownership and democratic management of the railroads was widely supported by labor. The Plumb Plan itself was endorsed in 1919 by every railway union along with the United Mine Workers of America

and a number of other national unions.[147] A referendum of railroad workers on the question of continued government ownership resoundingly endorsed the idea, with 99.5 percent in favor, 306,720 out of 308,186 votes.[148] After a lengthy debate at its 1920 convention, the American Federation of Labor (precursor to the AFL-CIO) endorsed "government ownership and democratic operation" of the railroads by a vote of 29,159 delegates to 8,349.[149] While this resolution was not an endorsement of any specific plan, it nonetheless followed from the railroad union's unanimous support for the Plumb Plan.

To promote the Plumb Plan, railroad unions formed the Plumb Plan League, and each paid monthly dues to support its activities and promote public ownership. The League set up branches across the nation and even published its own weekly newspaper Labor, which reached a circulation of 500,000 subscribers. The League was headed by rail labor leaders including the Grand Chief Engineer of the Brotherhood of Locomotive Engineers, Warren Stone, and Arthur Wharton, president of the Railway Employee's Department of the AFL. The League's staff was filled by leaders from every railroad union. The Plumb Plan League also received the support of some farmers, fed up with mistreatment from the railroads.[150]

Despite this strong support among labor and a concerted nationwide campaign, in coalition with other groups such as the Public Ownership League, the Plumb Plan failed to gain traction in Congress. With the passing of the Transportation Act of 1920, the railroads were handed back to their private owners.

147. John C. Hennen, *The Americanization of West Virginia: Creating a Modern Industrial State, 1916-1925* (University Press of Kentucky, 1996), 90. http://www.jstor.org/stable/j.ctt130j893.

148. Colin J. Davis, *Power at Odds: The 1922 National Railroad Shopmen's Strike* (University of Illinois Press, 1997), 44.

149. David Montgomery, *The Fall of the House of Labor: The Workplace, the State, and American Labor Activism, 1865–1925* (Cambridge: Cambridge University Press, 1987), 401; *Report of Proceedings,* Fortieth Annual Convention of the American Federation of Labor, (Montreal, Quebec, Canada: The Law Reporter Printing Company, June 7-19, 1920), 419-20.

150. Kerr, *American Railroad Politics*, 72-127.

THE CONSOLIDATED RAIL CORPORATION (CONRAIL)

The Consolidated Rail Corporation (Conrail) was created by Congress in the aftermath of Penn Central's demise, which at the time had been the largest bankruptcy in U.S. history. The collapse of Penn Central, and several other Northeastern railroads, threatened to deprive the Northeast of rail service and sever critical supply chains across the nation. To avoid this outcome, Congress enacted the Regional Rail Reorgani-

zation Act of 1973, which created the United States Railway Association (USRA) to oversee the creation and operation of a reorganized Northeastern rail system, and the Consolidated Rail Corporation as the quasi-public railroad to operate the railroads in the Northeast.[151] Conrail began operations on April 1, 1976, after the final system plan was approved.[152]

Conrail was structured as a federally chartered, government-owned for-profit corporation. The final system plan for Conrail also brought drastic cuts to trackage and branch lines, in pursuit of profitability. Thousands of miles of lightly used track were abandoned or sold to smaller Class II and III railroads. Despite the pain caused by these cuts, Conrail was effective at reviving rail service and made significant improvements to maintenance of track and equipment over its predecessor railroads. These reforms succeeded in making Conrail profitable sooner than expected, in 1981.[153]

After it became profitable, the government was charged by Congress to sell or liquidate Conrail by 1984. At the first auction, one of the few viable bidders was Conrail's employees, via the Railway Labor Executives Association, with a bid that would have created the nation's largest employee-owned corporation.[154] Labor's bid was ultimately rejected by Congress, and Conrail was publicly listed on the stock market where shares were sold in 1987. Throughout this whole time, Norfolk Southern and CSX were scheming to take over Conrail for themselves. This finally occurred in 1998 when the two railroads divided Conrail's assets, leaving only the jointly owned Conrail Shared Assets areas.[155]

151. "Conrail" (Consolidated Rail Corporation)," American-Rails.com, updated June 8, 2023, accessed July 28, 2023, https://www.american-rails.com/conrail.html.

152. Burns, "Conrail" (Consolidated Rail Corporation)."

153. Burns, "Conrail" (Consolidated Rail Corporation)."

154. Ed Townsend, "Employees make bid to buy Conrail," The *Christian Science Monitor*, June 16, 1983, https://www.csmonitor.com/1983/0616/061653.html

155. "About Conrail: History," Consolidated Rail Corporation, accessed July 28, 2023, https://conrail.com/about-conrail/history/.

PRESENT-DAY PUBLIC RAIL IN AMERICA

Many forms of public rail infrastructure and rail operators exist today. They range from small municipal railroads to some of the nation's busiest commuter railroads, Amtrak's Northeast Corridor, and even some of the Class I's own trackage. This section will provide further detail on the different types of publicly owned railroads in the United States and their importance to our nation's transportation system.

THE NATIONAL RAILROAD PASSENGER CORPORATION (AMTRAK)

The National Railroad Passenger Corporation, better known as Amtrak, was created in the same era as Conrail to take over money-losing passenger routes from railroads across the country, many of which were facing bankruptcy. Amtrak would be given the right to operate over the entire national network and assume responsibility for providing passenger service. Even though Amtrak was taking over unprofitable passenger services, for political reasons, Amtrak was charged with achieving profitability, a contradiction that has led to numerous issues in subsequent decades. As with Conrail, Amtrak was formed as a quasi-public corporation with shares held by the federal government.[156]

After a long series of debates about which passenger routes would be retained, 20 railroad companies opted to turn over their passenger services to Amtrak, which initially continued operations over 13 of these railroads' trackage. The first official day of Amtrak service began on May 1, 1971.[157] Not all railroads initially handed over their passenger trains to Amtrak. Some, including the Southern Railway and the Rio Grande, chose to continue operating their own passenger trains—though they too eventually handed them over to Amtrak. Companies that did hand over their trains paid a

156. Jeff Davis, "Amtrak at 50: The Rail Passenger Service Act of 1970," (October 30 2020). https://enotrans.org/article/amtrak-at-50-the-rail-passenger-service-act-of-1970/.

157. "Historic Timeline," accessed March 26, 2024, https://history.amtrak.com/amtraks-history/historic-timeline.

one-time fee or provided equipment to help Amtrak start up service.

Amtrak's subsequent history is complicated and worthy of much more detailed examination than can be provided here. Despite frequent underfunding at a Congressional level, Amtrak has succeeded in providing crucial transportation links across the nation. Today, Amtrak provides passenger rail service to over 500 towns and cities across 46 states.[158] Amtrak still operates three different categories of services: Northeast Corridor, State-Supported Routes, and Long-Distance Routes. Amtrak owns its own tracks in the Northeast, Wolverine, and Keystone Corridors. The remaining routes operate primarily over Class I trackage, whose freight trains are a frequent cause of delays. Freight railroads often ignore statutory priority for Amtrak passenger trains, forcing passengers to wait for freight trains to pass.

158. "Amtrak Routes & Destinations," accessed September 5, 2023, https://www.amtrak.com/train-routes.

After facing a sharp drop in ridership during the Covid-19 pandemic, Amtrak's trains are now setting ridership records as demand for climate-friendly travel options surges.[159] With the injection of tens of billions of dollars from recent infrastructure laws, the FRA's study on restoring long-distance routes, and Amtrak's Connects US plan, America is poised for a passenger rail renaissance. Interference from the Class I railroads remains one of the largest impediments to an otherwise promising landscape for passenger rail.

159. Amtrak, *Amtrak Fiscal Year 2023: Ridership Exceeds Expectations as Demand for Passenger Rail Soars* (November 30 2023), https://media.amtrak.com/2023/11/amtrak-fiscal-year-2023-ridership-exceeds-expectations-as-demand-for-passenger-rail-soars/.

THE NORTHEAST CORRIDOR

The Northeast Corridor (NEC) is the busiest passenger rail corridor in the United States, stretching between Washington D.C. and Boston, passing through some of the Northeast's largest cities, including Baltimore, Wilmington, Philadelphia, Trenton, Newark, New York City, New Haven, and Providence

The NEC came under public ownership after the collapse of Penn Central, an event that also gave rise to Amtrak and Conrail. Today, the NEC is still owned by several public organizations across its different segments: Amtrak, Metro-North Railroad, Connecticut DOT, and the Massachusetts Bay Transportation Authority (MBTA).[160] Alongside these agencies, NEC rail services are operated by the Long Island Rail

160. "The Corridor," Northeast Corridor Commission, 2023, accessed July 7, https://nec-commission.com/corridor/.

Road (LIRR), New Jersey Transit (NJT), Southeastern Pennsylvania Transportation Authority (SEPTA), Maryland Area Regional Commuter (MARC), and Virginia Railway Express (VRE).

The NEC carries hundreds of millions of passengers per year. At the end of fiscal year 2023, 628,000 trips were being made on the average weekday; pre-pandemic that number was 960,000.[161] Ridership continues to recover, and Amtrak corridor services exceeded pre-pandemic ridership levels at the end of 2023.[162]

The Northeast Corridor's physical infrastructure has been significantly improved by public investments made over the last 50 years. The Northeast Corridor Improvement Project that began in 1977 revitalized track, signals, and stations in a process of continual improvement that continues to this day. Amtrak also completed the electrification of the corridor by installing catenary between New Haven and Boston in the 1990s.[163]

Several other publicly owned corridors are connected to the NEC: the Keystone Corridor between Philadelphia and Harrisburg and the Empire Corridor from New York City to Albany are also publicly owned. Both of these corridors are electrified as well. The Keystone Corridor uses catenary, and the Empire Corridor is partially electrified using third-rail.

The Wolverine Corridor between Chicago and Detroit is primarily owned by Amtrak and Michigan DOT (MDOT), who have brought track speeds up to 110 mph through a series of infrastructure investments.[164] Under private freight ownership, passenger train speeds were limited to 30 mph because of Norfolk Southern's poor maintenance.

161. *Northeast Corridor Annual Report: Infrastructure and Operations Fiscal Year 2023,* (Northeast Corridor Commission, March 2024), 34-36, https://nec-commission.com/app/uploads/2024/04/NEC-Annual-Report-FY23.pdf.

162. Amtrak, Amtrak Fiscal Year 2023: *Ridership Exceeds Expectations as Demand for Passenger Rail Soars.*

163. Amtrak, "Historic Timeline."; Middleton, *When The Steam Railroads Electrified,* 430-32.

164. "The Chicago – Detroit Wolverine Corridor," accessed July 28, 2023, https://www.hsrail.org/wolverine-corridor/.

STATE-OWNED RIGHTS OF WAY

The most common form of publicly owned rail infrastructure in the United States today is in the form of state-owned rights-of-ways The nature of state-owned rights-of-way varies somewhat by the state but these properties are generally rail corridors entirely owned by a state government, operated by a public entity or leased to a private operator.

A state-owned right-of-way that exemplifies the benefit of public ownership is the North Carolina Railroad (NCRR). The NCRR spans from the Port of Morehead City to Charlotte, passing through Raleigh, Durham, and Greensboro. It has been majority-owned by the State of North Carolina since its inception, in the 1850s.[165] Throughout the 20th century, the line was leased to the Southern Railway, which became Norfolk Southern Railway.[166] In 1998, when the lease was running out, the State of North Carolina finally bought out the remaining privately held quarter of the company, leaving it as the sole owner. Rather than re-leasing full control of the line to Norfolk Southern, the NCRR decided to take back control of its track, while providing Norfolk Southern trackage rights to run freight trains on the line.[167]

165. Trelease, "The Passive Voice: The State and the North Carolina Railroad, 1849-1871," 174-79.

166. North Carolina Railroad Company, "A Brief History of the North Carolina Railroad Company," (North Carolina Railroad Company, 2016). https://www.ncrr.com/wp-content/uploads/2016/09/NCRR-History-Narrative.pdf.

The NC General Assembly also passed a statute requiring the NCRR to reinvest its lease earnings to improve the line. This has resulted in significant improvements, including increasing passenger speeds from 49 to 79 miles per hour (mph) between Raleigh and Selma and increasing freight speeds east of Goldsboro from 10-25 to 40 mph, while also allowing for trains up to 150 cars long (compared to 10-20 previously).[168] This is a vision of the what all railroads could look like under publicly ownership if earnings were reinvested in maintenance and infrastructure upgrades rather than dividends and stock buybacks.

167. North Carolina Railroad Company, "A Brief History of the North Carolina Railroad Company."

168. North Carolina Railroad Company, "A Brief History of the North Carolina Railroad Company."

The Western & Atlantic Railroad (W&A) owned by the State of Georgia is a state-built railroad that continues to exist today, leased to a private operator. The W&A, between Atlanta and Chattanooga, is leased to CSX with a clause that Georgia has the right to run passenger trains on the line if it chooses to do so.[169]

169. Surface Transportation Board, *CSX Transportation, Inc.-Lease-Western and Atlantic Railroad.*

Much more common than state-built railroads still in public hands are state-owned rights-of-way purchased from private railroads that wanted to abandon them. States frequently purchase and lease these lines to smaller rail operators to avoid completely abandoning rural communities whose industry and agriculture rely on them. Many states have laws, such as Maine's, providing the state first right of refusal to buy or lease a right-of-way prior to its abandonment or the dismantling of track.[170] With deregulation in 1970s and 80s, the rate at which Class Is sought to abandon unprofitable or low-profit trackage increased substantially, and it is in the period that states have acquired the bulk of their current trackage.

170. STATE RAILROAD PRESERVATION ACT, MRS Title 23 Chapter 615 §7105.

Almost every state has rail lines that have been acquired in this fashion and whose service continues only because of public ownership. The number of rail lines is too numerous to list here, but you can see your own state's publicly owned rail lines by searching for its State Rail Map or State Rail Plan and looking for DOT-owned lines. In Georgia, the state DOT owns 540 miles of rail, that is leases for operation by the Chattooga & Chickamauga Railway, CaterParrot Railnet, Georgia Northeastern Railroad, Georgia Southwest Railroad, Heart of Georgia, and Ogeechee Railroad Company.[171]

171. GDOT, *Georgia State Rail Plan* (April 6 2021), https://www.dot.ga.gov/InvestSmart/Rail/StateRailPlan/Georgia%20SRP%20Final%20Draft.pdf.

PUBLIC BRANCH LINES, PORT AUTHORITIES, AND TERMINAL RAILROADS

Another category of public railroad includes freight and switching railroads owned and/or operated by municipalities and port authorities. Many of these railroads were created in order to efficiently serve ports where multiple competing operators would have led to coordination issues. Others were created to take over rail services after Class Is decided to abandon branch lines serving small towns. These railroads exist all across the United States in various forms and sizes, from several miles of track to trackage in excess of 100 miles.

One of the smallest public entity-serving railroads is the Fore River Railroad, a 2.7 mile branch line owned by the Massachusetts Water Resources Authority (MWRA).[172] The line was purchased from General Dynamics when the shipyard it served closed and is now used to ship sludge and fertilizer for the MWRA in addition to serving several other industrial customers on the line.

172. Ronald Dale Karr, *The Rail Lines of Southern New England,* 2nd ed. (Branch Line Press, 2017), 388-90.

The Madison Railroad in Madison, Indiana was bought by the City of Madison in 1978 to avoid the rail line's abandonment, which would have cut off the city's industry from the national rail network.[173] The city formed the City of Madison Port Authority to operate the railroad. Under Penn Central, no maintenance had occurred between 1964 and 1978 because it was planning on abandoning the line entirely. Since the city took over, the Madison Railroad has invested more than $15 million to upgrade bridges and track and the Railroad has succeeded in attracting economic development to the region.[174]

173. Delay In Block Productions, *Almost Abandoned: Madison Railroad of Indiana* (YouTube, 2022).

174. "Our History," accessed July 25, 2023, https://www.madisonrailroad.com/our-history-1; Delay In Block Productions, *Almost Abandoned: Madison Railroad of Indiana.*

Several municipal railroads have been publicly owned since their inception, including the New Orleans Public Belt Railroad and Tacoma Rail. The City of Tacoma has owned and operated Tacoma Rail as a public utility since 1914. Tacoma Rail operates service through the Port of Tacoma and over more than 100 miles of connecting track. Its status as a public operator has allowed it to provide its services at close to cost and achieve an impressive on-time performance exceeding 99 percent.[175] Both Tacoma Rail and the New Orleans Public Belt Railroad are self-supporting from revenue and even financially support their municipalities.

175. "2022 Tacoma Rail Highlights," 2023, accessed March 27, 2024, https://www.mytpu.org/2022-annual-report/2022-directors-letter/2022-tacoma-rail-highlights/; "Tacoma Rail increases business with new port-of-call," updated May 11, 2021, accessed March 27, 2024, https://www.mytpu.org/tacoma-rail-increases-business-with-new-port-of-call/.

COMMUTER/REGIONAL RAILROADS

Commuter rail systems and regional railroads exist all across the United States, providing crucial passenger services over shorter distances than Amtrak. Traditional commuter rail services shuttle commuters between suburbs and city centers at the beginning and end of the workday, during peak hours. This commuting pattern has been significantly disrupted by the pandemic and more and more commuter rail systems are switching to a regional rail model with more regular service throughout the day to serve a broader range of customers.

Originally, most of these systems were operated by private railroads alongside their core freight services. However, with the rise of the automobile and alternative modes of transportation, passenger services began to lose money and railroads sought ways to dispose of their obligations. This led to public subsidies for commuter rail services and eventually public buyouts of entire operations.

Public ownership has allowed for the continued operation of these rail services that transport over a million riders per day in cities all across the United States.[176] Commuter rail operations are often directly owned and operated by a government authority, though some contract out operations to private companies. Although sources differ on which lines count as "commuter rail" precisely, today there are around 30 different systems in operation around the United States.[177]

176. Timothy J. Brock and Reginald R. Souleryette, *An Overview of U.S. Commuter Rail (University of Kentucky,* May 2 2013), Appendix A, https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1323&context=ktc_researchreports; *Northeast Corridor Annual Report: Infrastructure and Operations Fiscal Year 2022,* (Northeast Corridor Commission, March 2023), https://nec-commission.com/app/uploads/2023/03/NEC-Annual-Report-FY22.pdf.

177. Brock and Souleryette, *An Overview of U.S. Commuter Rail;* "Commuter Rail Systems in North America," Texas A&M Transportation Institute, accessed March 27, 2024, https://transit-mobility.tti.tamu.edu/resources/crprofiles/.

Many of these legacy systems, which were taken over from private operators, own the trackage they operate on, such as the MBTA in Boston or Caltrain in the Bay Area.[179] There are also legacy systems that don't, such as Metra, which has a complex system that includes the publicly owned and operated Electric District, Rock Island, Milwaukee North, and Milwaukee West lines as well as the BNSF and Union Pacific lines whose operations are still contracted out to their eponymous freight railroads. In general, unified operations and track ownership allows for more frequent service and better control over operations.

178. "Commuter Rail Systems in North America."

179. Brock and Souleryette, An Overview of U.S. *Commuter Rail.*

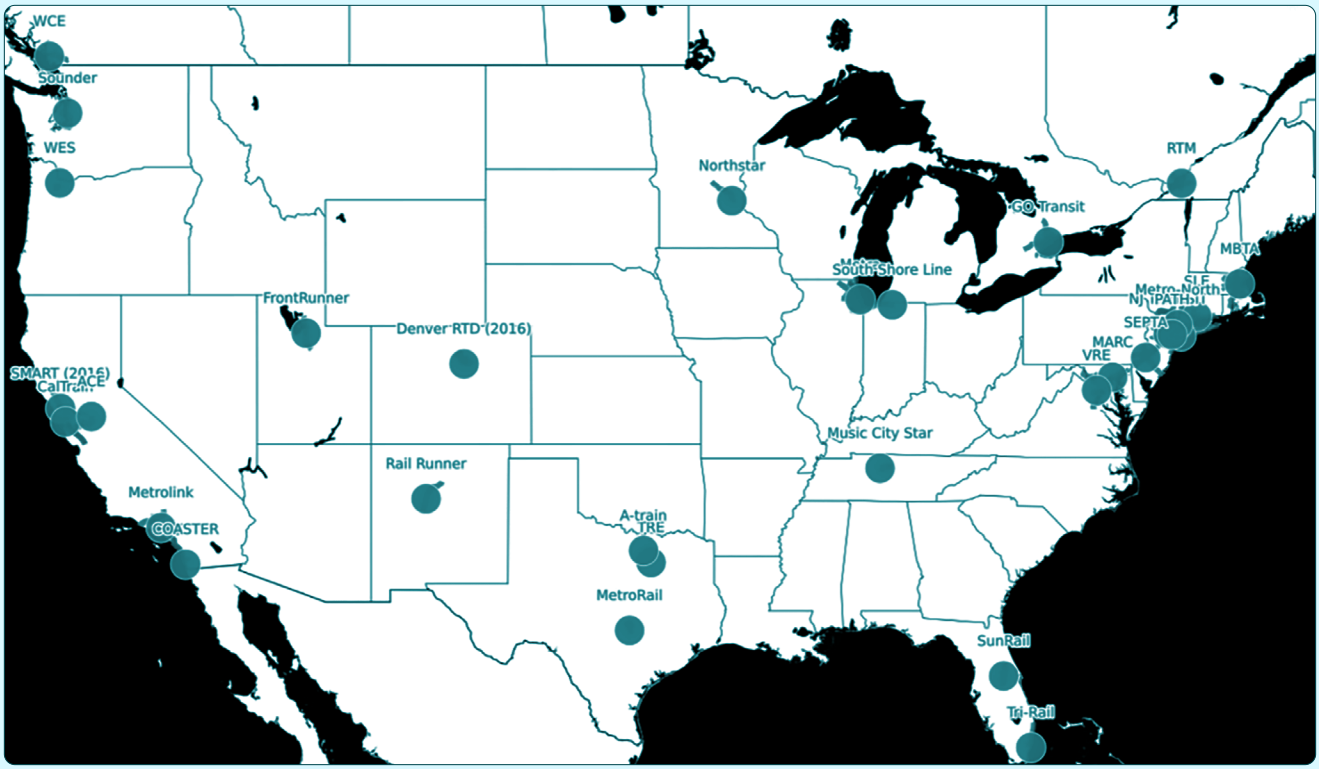

Figure 15. Map of U.S. commuter/regional Railroads[178]

"New start" commuter rail systems that have begun more recently often negotiate agreements with private freight railroads for the use of their tracks. Operating over freight rail tracks limits service frequency to such an extent that some systems have opted to purchase right-of-way from the Class Is to expand service and improve on time performance, such as the Virginia Railway Express and Tri-Rail in Florida.[180]

180. Marybeth Luczak, "CSX Starts Sale for Virginia's $3.7B Rail Initiative," *Railway Age* (April 15 2021). https://www.railwayage.com/passenger/csx-starts-sale-for-virginias-3-7b-rail-initiative/; Brock and Souleryette, An Overview of U.S. Commuter Rail.


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INTERNATIONAL RAIL SYSTEMS

In this section, we will examine rail systems from four different countries: India, Great Britain, Japan, and Switzerland. Two of these nations have privatized, or partially privatized, rail systems (Britain and Japan) and two have publicly owned rail systems (India and Switzerland). Each country's railroad is uniquely structured with its own history. By studying these systems, we can better understand the advantages and disadvantages of various decisions that might inform a public rail system for the United States.

INDIA

India's rail network is publicly owned and operated by Indian Railways, under the Ministry of Railways. Indian Railways is fully integrated, operating freight and passenger services, building rolling stock, and constructing new rail lines. Indian Railways serves as an effective example of the massive improvements in infrastructure and operations that are possible with an integrated publicly owned national railway and strong government support.

Like those in the US, India's railways carry a lot of freight. In fact, Indian Railways carries more freight tonnage in a year than the entire U.S. rail network. In 2023, Indian Railways carried 1.67 billion tons of freight traffic, which is more than the 1.6 billion tons carried by U.S. railroads in the average year.[181] Freight traffic in India has also steadily recovered from the pandemic, rising from 1.36 billion tons in 2021 to 1.56 billion tons in 2022.[182]

Unlike the Class Is in the US, however, Indian Railways carries this enormous volume of freight while also providing over ten thousand passenger train runs daily. In 2022, Indian Railways carried over 3.5 billion passengers, more than 100 times more than Amtrak carries in a year.[183]

Indian Railways is funded by revenue from operations, as well as support from the Ministry of Railways as allocated

181. Brock and Souleryette, An Overview of U.S. Commuter Rail; "Commuter Rail Systems in North America," Texas A&M Transportation Institute, accessed March 27, 2024, https://transit-mobility.tti.tamu.edu/resources/crprofiles/.

182. Short tons. Original figures: 1.231 and 1.416 billion metric tons (tonnes) respectively. Ministry of Railways, *Indian Railways Year Book 2021-22* (2023), 6, https://iritm.indianrailways.gov.in/uploads/files/1680252282408-PDF%20Year%20Book%202021-22-English.pdf.

183. Ministry of Railways, I*ndian Railways Year Book 2021-22,* 5-6.

in the government budget. In 2024, the amount allocated to the Ministry is 2.5 trillion Rupees, or around 30 billion dollars.[184] The amount of funding provided to the railways reflects a coordinated push to improve India's rail network. Government funding to the railways has grown nearly ten times since 2014 when a program for strong investment in rail began

Indian Railways has done an impressive job of coordinating this infrastructure investment. In the past ten years, Indian Railways has electrified more than 40,000 route kilometers (25,000 route miles) of track with overhead catenary.[185] The pace of construction has only accelerated as the project has progressed. In 2023 alone, Indian Railways electrified over 6,500 kilometers (4,000 miles) of track. India is electrifying using the international standard 25 kilovolts AC and has set an ambitious goal of full decarbonization by 2030. With 100 percent of the railways set to be electrified by the end of 2024, full decarbonization may well be within reach by 2030, requiring only a switch to renewable power sources.[186] This decarbonization deadline is decades ahead of those set in the rest of the world.

Indian Railways' electrification serves as a powerful counterpoint to the claim that electrification is unfeasible because double stack containers cannot fit under catenary wires. Not only does Indian Railways operate electric locomotive-pulled

184. Harshit Sabarwal, "India Budget 2024: For railways, FM Sitharaman says 3 major economic corridor programmes to be implemented," *WION* (February 1 2024). https://www.wionews.com/india-news/india-budget-2024-for-railways-fm-sitharaman-says-3-major-economic-corridor-programmes-to-be-implemented-685834.

185. Indian Railways, "Status of Railway Electrification," (March 1 2024). https://indianrailways.gov.in/railwayboard/uploads/directorate/ele_engg/RE/2024/Railway%20Electrification_final.pdf.

186. Nick Ferris, "How India electrified 45% of its railway network in just five years," *Energy Monitor* (February 2 2024). https://www.energymonitor.ai/tech/electrification/how-india-made-45-of-its-railway-network-electric-in-just-five-years/?cf-view.

187. Indian Railways, "Status of Railway Electrification."

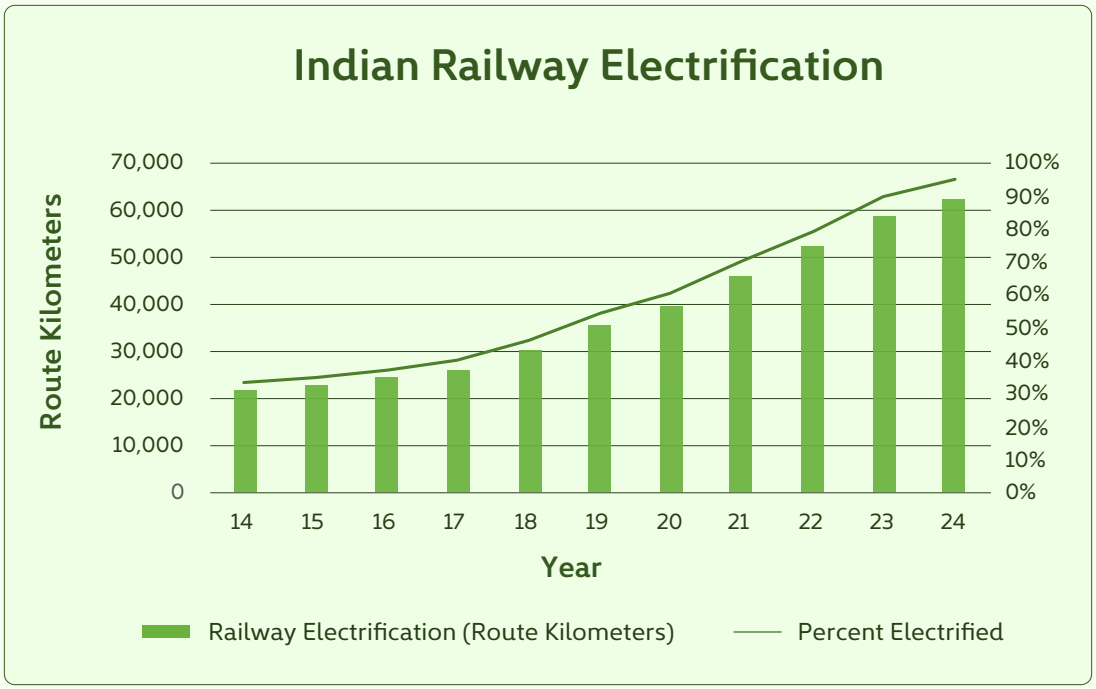

Figure 16. Indian Railway electrification rate (as of February 2024) [187]

trains of double stacked containers on electrified corridors, but the height of Indian double stacks is also greater than that of American trains.[188] This greater overall height is due to Indian Railway's use of flatcars where containers sit above the wheels, unlike American or Chinese "well cars" where containers sit down below the wheels, lowered down in a "well" in the middle of the railcar.

188. Oliver Cuenca, "Indian Railways launches electric double-stack container operation," *International Railway Journal* (June 16 2020). https://www.railjournal.com/freight/indian-railways-launches-electric-double-stack-container-operation/.

Indian Railways has also begun the construction of dedicated freight corridors. These routes are, at minimum, double tracked and electrified for high volume freight traffic.[189] The alignments are also designed for speeds up to 100 kilometers per hour (62 miles per hour). Trains on the dedicated freight corridors average 50-60 kilometers per hour (30-37 miles per hour), roughly three times faster than freight trains on conventional railway tracks where they intermingle with passenger traffic. These dedicated corridors are anticipated to cut freight travel times across India, while freeing up capacity on conventional tracks for passenger trains and shifting freight from congested highways onto rail.

189. IANS, "Freight corridors to speed up flow of goods, free up railway tracks," *ET Infra* (January 7 2024). https://infra.economictimes.indiatimes.com/news/railways/freight-corridors-to-speed-up-flow-of-goods-free-up-railway-tracks/106609523.

Aside from sufficient government funding, one of the key reasons why India has been so effective at carrying out these large-scale rail infrastructure projects is national coordination. Since Indian Independence in 1947, Indian Railways has laid out strategic 5-year plans for infrastructure investment and service.[190] These strategic plans are only possible because Indian Railways is fully integrated and publicly owned. It has also spent considerable effort to develop domestic capabilities to produce its own locomotives, rolling stock, and track components.

190. Ferris, "How India electrified 45% of its railway network in just five years."

Indian Railways is not without its issues—it has had several high-profile crashes in the past several years—but the sheer amount of freight and passengers it moves is astounding. Without stopping its operations, Indian Railways has undertaken an electrification project unparalleled throughout the rest of the world, made possible by strong government support and internal coordination. India's rail network presents a vision for what the U.S. could achieve if we made a concerted effort to invest in capacity and electrify our trackage while running many more passenger trains.

GREAT BRITAIN

Britain's rail system is quite different from that of the United States. It spans much shorter distances with a higher density of track, and it primarily carries passengers rather than freight. Nonetheless, it provides a useful example of the dangers that come from the privatization and fragmentation of a railroad system into dozens of pieces.

After decades of public ownership in the mid-20th century, British Rail was split into dozens of pieces, and privatized, separating track from operations and rolling stock and splintering train operations into regional franchises. The privatization of the railways had been seen as a step too far, even by Conservative Prime Minister Margaret Thatcher, and the British Treasury warned of the dangers of privatizing an industry with "many joint costs and interdependence of different services [which] cannot easily be broken down into separate elements."[191]

191. Sean McCartney and John Stittle, *The Privatisation of British Rail: How Not to Run a Railway* (Routledge, 2023), 6.

Despite these concerns, privatization went ahead under the subsequent government of John Major. It took less than a decade for private ownership of the track infrastructure, under Railtrack, to be deemed an utter failure. Railtrack's management had resulted in several deadly derailments, deferred maintenance, and rising construction costs. In 2002, the physical infrastructure was functionally renationalized under Network Rail, which shortly thereafter reabsorbed maintenance operations as well.[192]

192. José Gómez-Ibáñez, "Open Access to Infrastructure Networks: The Experience of Railroads," *Review of Industrial Organization* 49, no. 2 (2016): 332-34, https://www.jstor.org/stable/44737421.

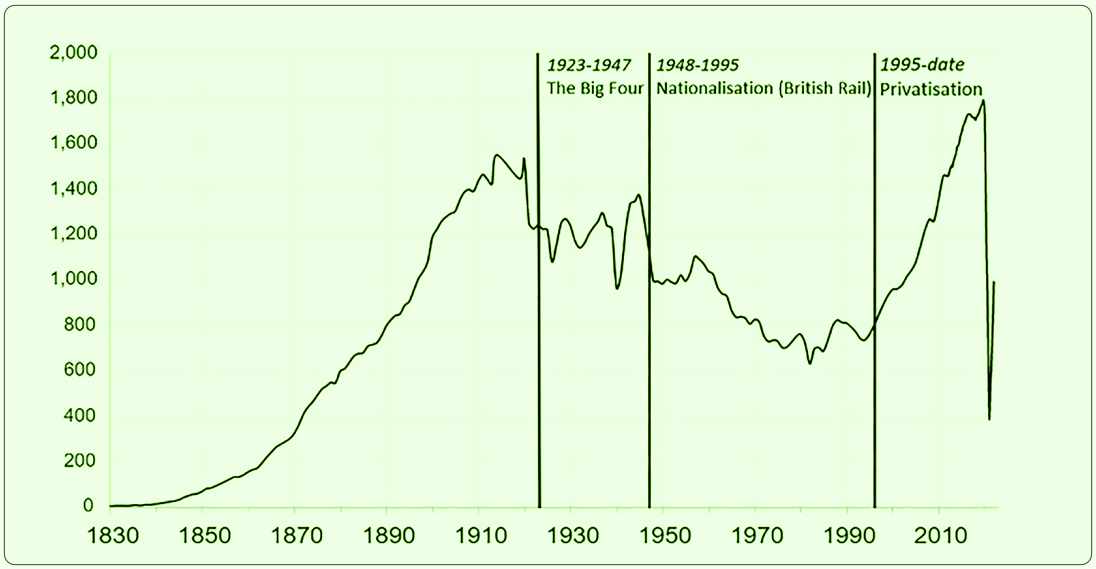

Figure 17. Rail passengers by year in Great Britain (in millions)

But the physical infrastructure was only part of the story. Defenders of Britain's rail privatization frequently point to a graph of rail passengers, included here as figure 17, to prove that privatization was a success.[193] While at first glance this graph looks impressive, the return of passengers to British railroads can be explained by other factors: as a phenomenon that occurred in spite of—rather than thanks to—private railroad operators.

193. Bellowhead678, "GBR rail passengers by year 1830-2015," (Wikimedia Commons: Wikimedia Commons, 2022).

To avoid getting bogged down in minutiae such as the early 1990s recession that the United Kingdom emerged from simultaneously with the privatization of British Rail, let us instead compare this supposed miraculous British passenger rail renaissance with ridership in another country. Switzerland, whose rail network we shall examine in greater detail later, has a fully integrated public rail system. If we set our base year in 1970, when passenger rail ridership was near its very lowest, we can compare the ridership recovery of Britain and Switzerland.

194. "Table 1230: Passenger kilometres, Great Britain, January 1938 to March 2023," ed. Office of Rail and Road (United Kingdom, 2023). https://dataportal.orr.gov.uk/statistics/usage/passenger-rail-usage/table-1230-passenger-kilometres/; "Transport de personnes: prestations de transport," ed. Bundesamt für Statistik (Switzerland, 2023). https://www.bfs.admin.ch/bfs/de/home/statistiken/mobilitaet-verkehr/personenverkehr/leistungen.assetdetail.29365088.html.

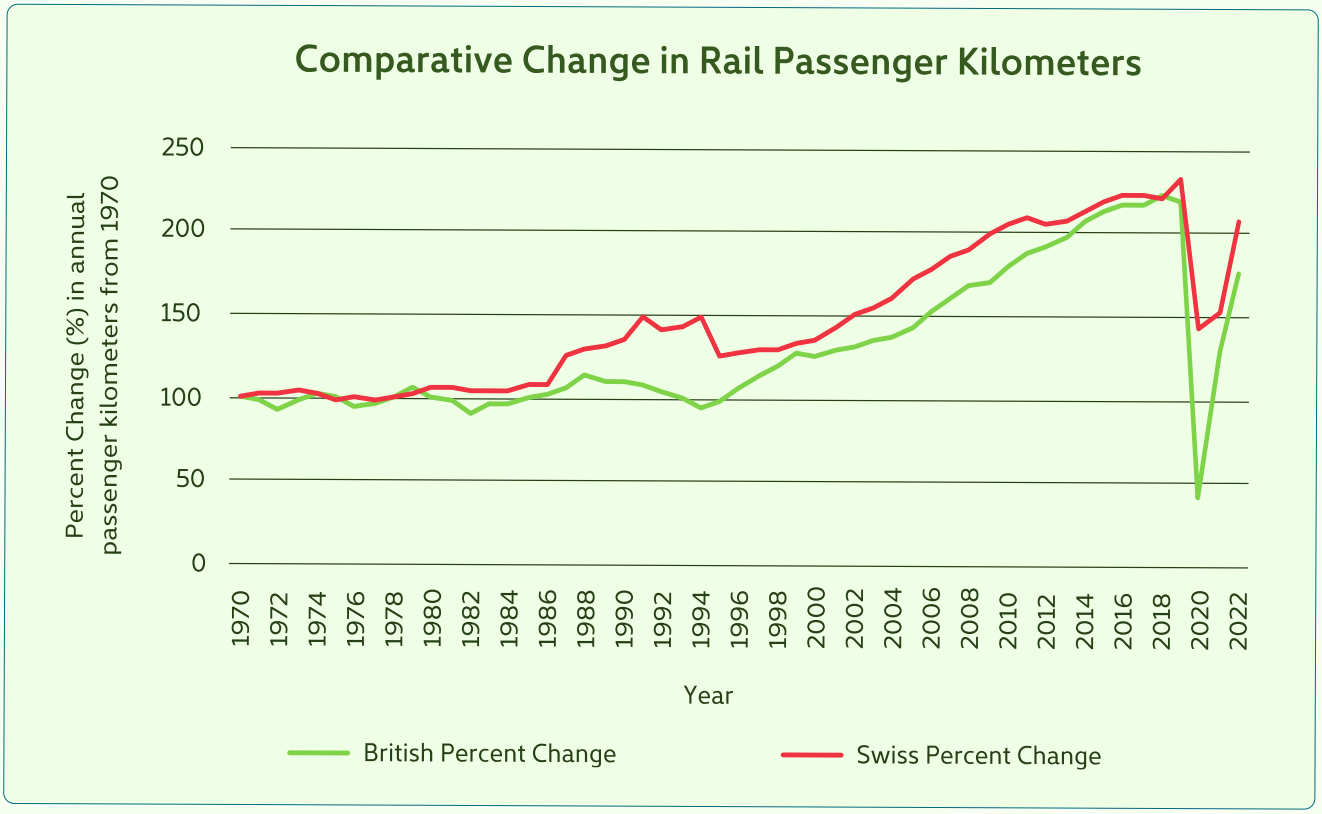

Figure 18. Comparative percent change in rail passenger-kilometers in Great Britain and Switzerland since 1970

As figure 18 shows, the increase in passenger-kilomters traveled in both Switzerland and Great Britain follows broadly the same trend over the past 50 years.[194] If anything, Switzerland outperformed Britain in both its ridership growth and its swift

recovery from Covid-19. In both countries, there are dozens of factors that influence ridership aside from private vs public ownership. All the same, this comparison demonstrates that British privatization did not produce some extraordinary, unparalleled result.

Privatization failed to deliver the innovation and cost-savings promised by its backers. In fact, prior to privatization, British Rail was among the most productive railways in Europe, even while receiving less public subsidy. Before privatization, British Rail's subsidy represented 0.16 percent of British GDP, compared to the 0.52 percent of GDP that countries in mainland Europe were spending on their railroads.[195] Since privatization, the amount of public subsidy to the railways has exploded. Rather than bringing in revenue from "premium payments," the British government is now paying exorbitant amounts to private corporations to operate its rail network.

The vast inefficiencies of the fragmented, private train operating companies have led to ballooning operating costs. Normally, when passenger volumes increase, unit costs per passenger decrease. Prior to privatization, British Rail was reducing its unit operating costs (that of carrying one passenger one kilometer) by around 2 percent per year.[196] This has not been the case for the privatized train operating companies, whose unit costs have risen at the same time as passenger volumes have soared.[197] One estimate suggests that £51 billion (in 2013/14 prices – roughly £69 billion in 2023) in additional costs between 1997 and 2014 would have been avoided if British Rail hadn't been privatized.[198]

The operating subsidy paid to British Rail in the late 1980s and early 90s hovered around £1-2.4 billion pounds (in 2020/21 prices).[199] By the mid-2000s, subsidy to private train operators had grown to £4-8 billion pounds, hitting £6.5 billion in 2019 pre-Covid. As a result of the Covid-19 pandemic, operating subsidy paid to train operating companies hit £16.9 billion, leading to a wholesale reevaluation of the franchising mode.

Private train operating companies have also failed to provide quality service or induce competition. Fragmentation has made the system more confusing for passengers and led to poor on-time performance across the nation.[200] To quote the government: "Before the pandemic, performance was disappointing and passengers' biggest priority for improvement

195. Christian Wolmar, *British Rail: A New History* (Penguin Random House UK, 2022), 332.

196. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 103-06.

197. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 89-104.

198. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 107.

199. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 20-21.

200. Keith Williams and Grant Shapps, *Great British Railways: The Williams-Shapps Plan for Rail* Department for Transport (May 20 2021), 13, https://www.gov.uk/government/publications/great-british-railways-williams-shapps-plan-for-rail.

was punctuality. Around half of trains in northern England and a third of trains nationally were late in 2019/20. This has barely improved in the past five years."[201] On top of poor service quality, private operators have also raised prices for consumers in pursuit of profit, making Britain's rail tickets some of the most expensive in Europe.

There have been so few companies bidding for franchises that two-thirds of contracts have been awarded without any competition since 2012.[202] In the absence of any real consequences for failing to fulfill the terms of their franchise, train operating corporations often overbid during contract tendering, promising high premium payments to the government at the end of their contract period. This tendering process allows companies to cash in for the first few years of low premium payments and cease operation when they can't afford to make the premium payments they promised for the end of the contract.[203]

When these failures occur, the Department for Transport steps in to either re-bid the franchise or take over as operator of last resort. Prior to Covid, two franchises had already been taken over by the government for the long-term. After Covid, the prevalence of government operators ballooned, with most rail services in Scotland and Wales being re-nationalized as Scot Rail and Transport for Wales. In 2021, the Williams-Shapp White Paper was published outlining the failures of the franchising system and calling for a new model for the railways. The introduction to the white paper concludes with precisely what we posited earlier: "The railways have been successful despite this complex system and culture, not because of it."[204]

Privatization failed to deliver the innovation or competition it promised. Instead, Britain has seen rising ticket prices, declining service quality, and a higher subsidy payment to private companies. Britain's privatization of the railways was a failure that they are slowly rectifying by bringing the train operations and infrastructure back under public control.

201. Williams and Shapps, The *Williams-Shapps Plan for Rail,* 13.

202. Williams and Shapps, *The Williams-Shapps Plan for Rail,* 18.

203. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway,* 79-80.

204. Williams and Shapps, *The Williams-Shapps Plan for Rail,* 15.

JAPAN

Japan's railway system is famous for its Shinkansen high speed rail network. Japan's rail system also has some of the highest ridership in the world, carrying 25.2 billion passengers in 2019 across 435 billion passenger-kilometers. Over 80 percent of all passengers carried in Japan travel on the rail network, while the remaining 20 percent are split between buses, airlines, and ferries.[205]

Since 1987, Japan's railway system has been partially privatized, albeit through a very different process than British Rail. The former state-owned railway company, Japan National Railways (JNR), was divided into six vertically-integrated companies as a part of Japan Railways Group (commonly referred to as JR Group). Freight services remained under a nationwide provider with universal track access, JR Freight.

The JR Group companies were very carefully designed when JNR was split up in 1987. The territory and Shinkansen access charges paid by the Honshu JR companies (JR East, West, and Central), on Japan's main island, were planned so that each company's profits would be relatively equal, and capable of paying off their portion of JNR's debt. The Honshu JR companies also paid into a fund to subsidize the unprofitable Island JR companies (JR Kyushu, Shikoku, and Hokkaido).[206] The JR Group companies further benefited from the majority of JNR's debt being taken over by the JNR Settlement Corporation.[207]

The Honshu JR companies, as the profitable railways among the group, were the first to be fully privatized. One of the island railways, JR Kyushu, was also privatized in an initial public offering in 2016. JR Hokkaido, JR Shikoku, and JR Freight remain publicly owned by Japan Railway Construction, Transport and Technology Agency (JRTT).

The government remains deeply involved in the railway system through JRTT constructing new Shinkansen lines. The earliest Shinkansen lines were constructed with government funds under JNR and though originally planned to be leased to JR Group for operation after privatization, these lines were sold to the Honshu JR companies to ensure the private company's financial success.[208] Subsequent Shinkansen lines have been constructed by JRTT, including the Hokkaido, Tohoku, Joetsu, Hokuriku, and Kyushu Shinkansen. These lines remain publicly owned and are leased to JR Group companies.[209]

205. *Statistical Handbook of Japan 2023*, ed. Statistics Bureau (Ministry of Internal Affairs and Communications, 2023), 97-98.

206. Tatsujiro Ishikawa and Mitsuhide Imashiro, *The Privatisation of Japanese National Railways: Railway Management, Market and Policy* (Great Britain: The Athlone Press, 1998), 31-43.

207. Ishikawa and Imashiro, *The Privatisation of Japanese National Railways*, 27-30.

208. Ishikawa and Imashiro, *The Privatisation of Japanese National Railways*, 32-33.

209. JRTT, *JRTT Profile*, https://www.jrtt.go.jp/english/jrttprofile-en.pdf.

The Chuo Shinkansen, JR Central's ultra-high-speed maglev project, has also received preferential government bonds for 3 trillion yen (over half of the project's total projected cost when awarded).[210] In addition to Shinkansen Lines, JRTT has constructed and owns several urban rail lines, which are leased to JR Group companies.

Japan also has non-JR Group railways, which largely fall into two categories: private railways and "third sector" railways, which have mixed public-private ownership. Many of these rail lines fall into similar categories as Class II and III railroads in the United States. During the process of privatizing JNR, dozens of local rail lines were transferred to local control under third sector railways.

As well as receiving government support for infrastructure investment, both JR Group and private railways remain carefully regulated as public utilities. JR Group companies' business plans and debt issuances are subject to approval by the Ministry of Transport.[211] Railways in Japan derive the majority of their revenue from passenger fares and hold a significant share of the transportation market.

To prevent railways from abusing their position, fare increases are subject to approval by the Ministry of Transport. Railway

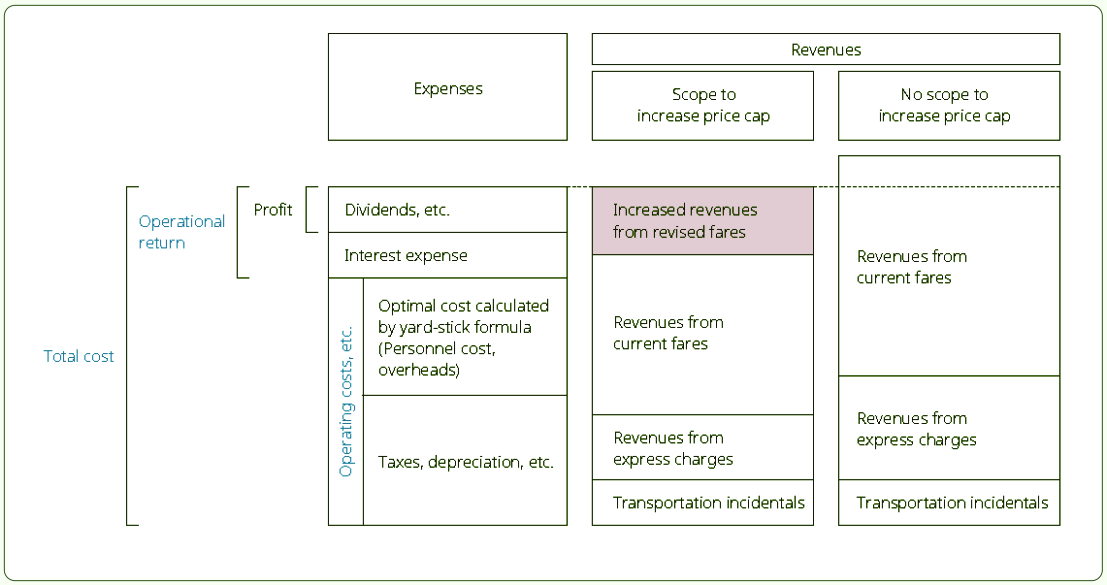

Figure 19. Total cost calculation and fare price cap approval on Japanese railways[212]

companies in Japan are allowed to earn revenues equal to their total cost, determined to be a combination of operating costs and a reasonable return on investment, as shown in

210. Keith Barrow, "JR Central's Shinkansen 'dual system' to create Japanese megaregion," *International Railway Journal* (April 17 2019). https://www.railjournal.com/in_depth/jr%E2%80%88centrals-shinkansen-dual-system-japanese-megaregion/.

211. Chul Ju Kim and Michael C. Huang, "The Privatization of Japan Railways and Japan Post: Why, How, and Now," November 2019, 1039, Working Paper, Asian Development Bank Institute.

212. Masaru Okabe, "New Passenger Railway Fares," *Japan Railway & Transportation Review*, no. 37 (2004).

figure 19. The government approves a price ceiling for passenger fares, rather than setting a fixed fare, to allow flexibility while also preventing customers from being overcharged.[213]

Another defining feature of post-privatization JR Group companies and private railways in Japan is their diversification outside rail transportation.[214] JR East and JR Kyushu derive 32 percent and 60 percent of their operating revenue from non-rail ventures such as real estate and retail respectively.[215] This non-rail revenue helps to stabilize income during years of lower ridership and transportation revenue.

This diversification for the JR Group was possible as a result of two convergent factors. First, the process of privatization removed a statutory restriction on JR Group companies that had prevented JNR from operating non-rail-related businesses.[216] Second, JR Group companies own their stations and surrounding real estate because they remained vertically integrated. These two conditions have allowed for JR Group to capitalize on the extremely high ridership that passes through their system each day through desirable apartments near stations and retail within—both forms of transit-oriented development.

Japan's rail system is truly unique in the world. It is highly efficient at carrying tens of billions of passengers each year. Japan's regulatory approach is an in-between compared to the United States' pre-ICC rate setting model and post-Staggers deregulation. While this is a model applied to passenger fares, the concept of rate ceilings for freight might be applied to a U.S. public rail corporation. Japan's privatization has been successful relative to other countries like the United Kingdom largely because it has been limited in essence. The government still plays a strong role in overseeing and supporting the rail industry. JR Group companies, controlling the vast majority of Japan's trackage, are a unique entity within the corporate landscape and treated as public utilities.

213. West Japan Railway Company, *Fact Sheets 2023* (2023), 19, https://www.westjr.co.jp/global/en/ir/library/fact-sheets/2023/pdf/fact19.pdf.

214. Eleanor Warnock, "Lessons from Railway Privatization in Japan," *Tokyo Review* (October 11 2018). https://tokyoreview.net/2018/10/japan-railway-privatization/.

215. East Japan Railway Company, FY2024.3 *Financial Results Presentation* (April 30 2024), https://www.jreast.co.jp/e/investor/pdf/2024_presentation.pdf; Kyushu Railway Company, FY24.3 *Annual Investors Meeting Presentation* (May 10 2024), https://www.jrkyushu.co.jp/company/ir_eng/news/__icsFiles/afieldfile/2024/05/10/9142.FY2024.4q.material.en_1.pdf.

216. Kim and Huang, "The Privatization of Japan Railways and Japan Post", 4.

SWITZERLAND

Switzerland is renowned for its frequent and reliable rail system. It has the highest rail utilization in Europe, with the average person travelling 2,451 kilometers by train annually—1,013 more kilometers than the average French person who travels the second most by rail. Swiss railways also rank highest in Europe for punctuality, safety, and overall ridership.[217] This world-leading performance is all thanks to meticulous planning and sustained public investment.
Switzerland's largest railroad is Swiss Federal Railways (SBB), a public corporation owned by the Swiss Confederation, carries over 80 percent of the nation's passenger-kilometers. In addition to SBB, there are over 40 private railways in Switzerland.[218] However these private railways are predominantly owned by the Swiss Confederation and regional Canton governments. The average private share of ownership in private Swiss railway companies is only around 10 percent.[219]

For the bulk of the 20th century, SBB was a public institution within the Swiss federal government. In 1996, Switzerland began a series of railway reforms which led to redesignating SBB as an independent corporation with shares 100 percent owned by the Swiss Confederation. This reform gave SBB operational autonomy from the Swiss government, but the Confederation still shapes SBB's "strategic direction" through contracts signed every 4 years for rail services.[220]

Swiss railway reform over the past 30 years was carried out slightly differently than the European Union's (EU) standard liberalization policy to introduce competition through vertical separation of track from operations, open access for international trains, and franchising of regional services. SBB and large private railways' infrastructure and operations were split into separate divisions but remain within the same companies. The idea of full separation into infrastructure management and train operating companies[221] was rejected because of concerns that it would lead to much higher coordination costs and prevent the Swiss rail system from maintaining its extraordinarily high track capacity utilization.[222]

While railway companies remain vertically integrated, train paths are allocated neutrally by an independent federal entity known as TVS. The Federal Office of Transport maintains a key role in coordinating between SBB and private operators to determine the country's transport needs and design the

217. Luigi Jorio, "Are Swiss trains becoming less punctual, pricier and more dangerous?," (September 16 2019). https://www.swissinfo.ch/eng/business/public-transport-in-numbers_are-swiss-trains-becoming-less-punctual-pricier-and-more-dangerous/45231238.

218. Didier van de Velde, Switzerland: Research on Railway Competition - National Report, Erasmus University Rotterdam (January 1998), 40-41; "TVS Briefly Explained," accessed April 29, 2024, https://www.tvs.ch/tvs-briefly-explained.

219. van de Velde, Switzerland: Research on Railway Competition, 40-41.

220. SBB was restructured as a public corporation in 1999 during the second stage of Swiss railway reform. Christian Desmaris, "The reform of passenger rail in Switzerland: More performance without competition," Research in Transportation Economics 48 (December 2014): 291, https://www.sciencedirect.com/science/article/pii/S0739885914000961.

221. Desmaris, "The reform of passenger rail in Switzerland: More performance without competition," 291; van de Velde, Switzerland: Research on Railway Competition, 24.

222. van de Velde, Switzerland: Research on Railway Competition, 83; "Railway Reform," Swiss Confederation, accessed May 17, 2024, https://www.bav.admin.ch/bav/en/home/modes-of-transport/railways/informations-for-professionals/railway-reform.html.

nationwide timetable.[223] These timetables are then submitted to TVS to ensure that all of the proposed train routes are viable and resolve any conflicts that may exist between train paths.[224]

Switzerland has a nationwide clockface timetable. Intercity trains depart from each station at regular intervals, hourly or half-hourly, allowing for easy connections between different routes. The average wait time for a connection between two lines at any station across Switzerland is less than 10 minutes.[225] Passengers are able to make their connections 98 percent of the time.[226] Planning for this timetable requires an incredible amount of coordination between SBB and the smaller private railways. This coordination is only possible because of Switzerland's public owned rail system that is focused on high quality service. Planning for Switzerland's nationwide timetables begins years ahead of time and has already begun planning for 2030-2040 timetables.[227]

Trains included in the national timetable are given priority over all other trains in the allocation of train paths by TVS. This prioritization is seen as necessary for Switzerland to maintain its impressive on-time-performance, with 90 percent of trains at each station within 3 minutes of their scheduled arrival.[228] For non-timetable services seeking access to the network, there is a procedure for authorization and path allocation that ensures that new services will not hinder the system's overall performance. New train operating companies must also fulfill wage and work standards to prevent "social dumping" where companies seek to compete by undermining existing collective bargaining agreements to provide cheaper service.[229]

Another aspect of Swiss railway reform was regionalization, whereby Cantonal governments were given a greater role in designing and coordination regional services. The greater autonomy for Cantons to coordinate regional rail service has allowed for greater responsiveness to local needs and demands. This regionalization has been effective insofar as it has increased regional passenger ridership in line with the increase in intercity ridership. At the same time, the amount of subsidy per train-kilometer decreased from 10.2 Swiss Francs (CHF) in 2000 to 7.8 CHF in 2013.[230]

Swiss railway reform has been overwhelmingly successful, coupled with strong investments in infrastructure improve-

223. Desmaris, "The reform of passenger rail in Switzerland: More performance without competition," 296; Ian Griffiths, "Notes from Switzerland: The nation-wide system of coordination," Seamless Bay Area, May 18, 2023, https://www.seamlessbayarea.org/blog/2023/6/5/notes-from-switzerland-the-nation-wide-system-of-coordination-for-9m-people; Tim Petersen, "Watching the Swiss: A network approach to rural and exurban public transport," Transport Policy 52 (November 2016): 184, https://www.sciencedirect.com/science/article/pii/S0967070X16301469.

224. TVS, "TVS Briefly Explained."

225. "The integrated timetable of Switzerland," Jokteur, 2022, accessed May 18, 2024, https://www.jokteur.com/a/integrated-timetable-switzerland/.

226. Chantal Britt, "The Swiss timetable is due to meticulous planning," (December 9 2012). https://www.swissinfo.ch/eng/democracy/the-swiss-timetable-is-due-to-meticulous-planning/34102496.

227. "Über uns," accessed May 16, 2024, https://www.sob.ch/die-sob/ueber-uns.

228. Britt, "The Swiss timetable is due to meticulous planning."

229. van de Velde, *Switzerland: Research on Railway Competition*, 25-29; Luigi Jorio, "Does the Swiss rail network have room for international competition?," (April 24 2024). https://www.swissinfo.ch/eng/life-aging/does-the-swiss-rail-network-have-room-for-international-competition/76350426.

230. Desmaris, "The reform of passenger rail in Switzerland: More performance without competition," 292.

ments. Unlike other European countries that underwent reform in their rail industries, Switzerland has achieved productivity improvements based on increases in passenger and freight traffic instead of reductions in employees. Between 1995 and 2011, passenger ridership increased 51.6 percent and freight traffic grew 51.4 percent.[231]

In addition to its impressive passenger service, the Swiss rail network moves a sizeable amount of freight. Since the 1990s, between 37 and 40 percent of all tonne-kilometers of freight in Switzerland has moved by rail.[232] Rail's share of trans-Alpine freight traffic crossing the country is even higher. In 1994 Swiss voters approves the Alps Initiative to shift trans-Alpine freight to rail in order to protect the Alps from heavy truck traffic. As of 2023, rail has increased its share of trans-Alpine freight traffic to 72 percent.[233] To achieve this modal shift, Switzerland has invested significantly in two new rail tunnels beneath the Alps and other infrastructure upgrades.[234]

Switzerland's world-class rail system represents a glimpse of the national coordination and high-quality services that are possible under public ownership. Precision Scheduled Railroading has been anything but in the United States. The Swiss rail system is not only precise and scheduled, but it has achieved double digit growth over the past few decades in freight and passenger traffic.

231. Desmaris, "The reform of passenger rail in Switzerland: More performance without competition," 294.

232. "Goods transport by rail," Swiss Confederation, accessed May 18, 2024, https://www.bfs.admin.ch/bfs/en/home/statistics/mobility-transport/goods-transport/rail.html#1341356389.

233. Quintus Vosman, "Swiss report drop in trans-Alpine rail freight," *International Railway Journal* (March 26 2024). https://www.railjournal.com/freight/swiss-report-drop-in-trans-alpine-rail-freight/; Britt, "The Swiss timetable is due to meticulous planning."

234. van de Velde, Switzerland: *Research on Railway Competition,* 36.


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ANALYZING MODELS FOR PUBLIC RAIL

There are multiple models of public ownership and operation that have been developed by different rail systems over the past century. For the sake of brevity, they have been broken down in this section into three categories representative of the contemporary international rail landscape: open access, franchising, and fully integrated public operation. Within each category there is a great deal of variation, and many countries have a hybrid structure that includes components of each model. Each model has its own advantages and disadvantages.

OPEN ACCESS: PUBLIC OWNER, MULTIPLE OPERATORS

Open access is a model that has become increasingly popular over the past 30 years as it has continued to be rolled out in the European Union. Open access is relatively novel and is composed of several principles. One of the most basic principles of the open access model is vertical separation. Track infrastructure is separated from train operations. The track infrastructure is either owned and maintained by an infrastructure manager or segmented into an independent subsidiary of a railroad holding company.

This vertical separation is designed to allow for nondiscriminatory allocation of train paths by a third party. This structure allows for new market entry by small train operating companies and fosters "on track" competition. Proponents of open access suggest that competition between multiple operators will lead to more plentiful, higher quality services at lower prices. In the US, open access has also been proposed as a solution to the problem of "captive shippers" served by one railroad. "On track" competition under open access is intended to spur a modal shift to rail. Though open access remains relatively novel, a study of its effects in Europe concluded that neither vertical separation nor the introduction of competition has led to an increase in rail's modal share.[235]

235. Zdeněk Tomeš, "Do European reforms increase modal shares of railways?," Transport Policy 60 (November 2017): 150, https://www.sciencedirect.com/science/article/pii/S0967070X16306941.

One of the driving forces behind open access in the EU is the desire to develop more long-haul international rail traffic by allowing train operators to cross between national rail networks.[236] This motivation is less important in the United States, or even North America more broadly, as our rail network is already based on common technical and operating standards across the continent. In this way, open access is less important if we can have a unified railroad across the entire United States—or facilitate efficient interchanges between railroads.

The concept of shared access is not entirely foreign to the United States—out of our 171,061 miles of railroad, approximately 20 percent had some sort of shared access, as of 2005.[237] This represents 30,151 miles (17.7%) of rails with shared access rights and 6,678 miles (3.9%) of terminal and switching railroads which provide customers with access to multiple other railroads. These access rights are often reciprocal with other railroads, and in many cases date back decades. Open access would be a significant departure from this precedent, by providing all rail operators access to the entire public rail network.

Open access runs into issues with the fundamental economics of railroads. Railroads experience significant economies of density—it is much more efficient for one railroad to serve three customers on a line than for three railroads to individually operate a train for each customer. As a consequence, open access might not even lead to a competitive market for rail transportation, especially if the Class Is continue to exist, because there are dramatic benefits to operational efficiency resulting from traffic density.[238] Competition, then, may come at the expense of operational efficiency and frequent turnover among rail companies. Another issue with the open access model is the sacrifice of the numerous cost benefits of vertical integration and the economies of scale that are experienced by rail companies.[239]

Open access also removes the common carrier obligation from each train operator, granting them permission to compete in each market as they desire. Under an open access regime, one can easily imagine that private operators would compete for profitable, high volume unit train customers while leaving lower-volume shippers to the public option operator—who would then have to rely on greater public subsidy in order to continue providing its services. Across-

236. Chris Nash, "Europe: Alternative Models for Restructuring," in *Competition in the Railway Industry: An International Comparative Analysis*, ed. José Gómez-Ibáñez and Ginés de Rus (Edward Elgar, 2006; reprint, 2015), 27-29.

237. Gómez-Ibáñez, "Open Access to Infrastructure Networks: The Experience of Railroads," 335.

238. Robert E. Gallamore and John C. Panzar, "When is Competition Not Good? The Case of Compelled Access and Maximum Rate Regulation for Railroad "Captive Shippers"" (October 6 2004), 12-14; Russell Pittman, "Structural Separation to Create Competition? The Case of Freight Railways," *Review of Network Economics* 4, no. 3 (2005): 191-92, https://doi.org/10.2202/1446-9022.1072.

239. Pittman, "Structural Separation to Create Competition? The Case of Freight Railways."

240. Interview with Christian Wolmar; José Gómez-Ibáñez, "The Simple Analytics of Open Access With Illustrations From Railroads" (paper presented at the Australian Competition and Consumer Commission, Surfers' Paradise, Queensland, July 29 2010), 10; McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 9-13.

241. Monika Jandová and Tomáš Paleta, "Impact of on-track competition on public finances – The case of the Czech Republic," *Journal of Rail Transport Planning & Management* 12 (December 2019): 11, https://www.sciencedirect.com/science/article/pii/S2210970619300198.

the-board open access was not chosen in the EU or the UK for the same reason: concern that open access operators would "cherry pick" profitable routes, leaving the government to operate the remaining services at an even higher cost.[240] This exact behavior has been observed with the introduction of open access passenger service on the most profitable lines in Czechia.[241]

The most troubling drawback to open access is the specter of high transaction and coordination costs. Significant economic literature suggests that even a small decrease in productive efficiency brought about by vertical separation, and its added coordination costs, can outweigh even a significant decrease in freight rates.[242] From a purely operational perspective, vertically-integrated railroads are more effective at routing trains, switching cars, and allocating scarce track capacity.[243] Vertically-integrated railroads can make decisions internally, rather than through a complex system of negotiations involving the infrastructure owner, various private operators, and the government regulator.

Resolving disputes over train paths/time slots, enforcing technical standards for the wheel-rail interface, and determining responsibility for any delays or wrecks in a situation with multiple operators and an infrastructure manager would require a strong independent regulatory agency.[244] This situation would lead to a decrease in service flexibility and make responding to service disruptions more difficult, requiring more rigid contracting and a potentially enormous amounts of litigation.[245] Vertical separation tends to cause more issues for systems with higher freight densities—such as ours in the United States—compared with more passenger heavy networks, implying that open access may be a poor choice for the U.S. even if it succeeds in Europe.[246]

A similar dilemma presents itself as relates to service innovation under open access. While competition may incentivize operators to innovate service patterns or infrastructure design, the design of open access may prohibit as much innovation as it incentivizes. The separation of infrastructure from operations and the need to coordinate between the many parties involved can make it harder to agree on investments or respond to shifts in demand.[247]

The heart of the issue with open access is that it does not necessarily resolve the existing problems of the private rail

242. John D. Bitzan, "Railroad Costs and Competition: The Implications of Introducing Competition to Railroad Networks," *Journal of Transport Economics and Policy* 37, no. 2 (2003), http://www.jstor.org/stable/20053931; Gallamore and Panzar, "When is Competition Not Good? The Case of Compelled Access and Maximum Rate Regulation for Railroad "Captive Shippers"," 14; Gómez-Ibáñez, "Open Access to Infrastructure Networks: The Experience of Railroads," 340-41; Lorenzo Casullo, "The efficiency impact of open access competition in rail markets: The case of domestic passenger services in Europe," March 2016, No. 2016-07, Discussion Paper, The International Transport Forum.

243. Gallamore and Panzar, "When is Competition Not Good? The Case of Compelled Access and Maximum Rate Regulation for Railroad "Captive Shippers"," 15-16.

244. Malcolm Abbott and Bruce Cohen, "The privatization and de-privatization of rail industry assets in Australia and New Zealand," *Utilities Policy* 41 (August 2016): 49, https://www.sciencedirect.com/science/article/pii/S0957178716300923.

245. Gómez-Ibáñez, "Open Access to Infrastructure Networks: The Experience of Railroads," 326; Gertjan Driessen, Mark Lijesen, and Machiel Mulder, *The impact of competition on productive efficiency in European railways*, CPB Netherlands Bureau for Economic Policy Analysis (September 2006), 32.

246. Fumitoshi Mizutani et al., "Comparing the Costs of Vertical Separation, Integration, and Intermediate Organisational Structures in European and East Asian Railways," *Journal of Transport Economics and Policy* 49, no. 3 (2015): 513, https://www.jstor.org/stable/jtranseconpoli.49.3.0496; Pittman, "Structural Separation to Create Competition? The Case of Freight Railways."

system. A public infrastructure manager might improve track maintenance on the rail system, as the North Carolina Railroad has, but it is unlikely that private open access operators (possibly the same Class Is) would suddenly put a strong emphasis on equipment maintenance when they are relieved of responsibility for maintaining the tracks. Locomotive and railcar maintenance might even decline, as vertical separation reduces the incentive for resolving flat spots or other wheel defects that might damage rail—since the track maintenance is no longer the operator's responsibility.[248]

There is likewise little reason to believe that open access operators would be more willing to listen to whistleblowers, provide crew with ample rest time, or hire sufficient workers to provide regular schedules. Lastly, the coordination challenges presented by open access make infrastructure investment more difficult.[249] Consequently, open access is likely to be an impediment to electrification and infrastructure investments needed to guarantee America has a climate friendly rail system with sufficient capacity to meet the demands of the 21st century.

247. Gómez-Ibáñez, "Open Access to Infrastructure Networks: The Experience of Railroads," 318.

248. Pittman, "Structural Separation to Create Competition? The Case of Freight Railways," 183-87; Gómez-Ibáñez, "The Simple Analytics of Open Access With Illustrations From Railroads," 12.

249. Gómez-Ibáñez, "The Simple Analytics of Open Access With Illustrations From Railroads," 4; Abbott and Cohen, "The privatization and de-privatization of rail industry assets in Australia and New Zealand," 49.

FRANCHISING: PUBLIC INFRASTRUCTURE, CONTRACTED OPERATIONS

Franchising is an option that would allow different segments of the public rail network to be contracted or leased out to various operators, public or private. The style and terms of franchises/concessions/leases vary greatly among existing examples around the globe and in the United States. Some agreements include responsibility for track maintenance by the franchisee and others have the infrastructure manager retain that responsibility. In the United States, many commuter railroads and tracks owned by state DOTs are contracted out to private railroads to operate.[250]

Franchises can be awarded in a number of ways, but the most popular method is through "competitive tendering" where various companies compete for the concession to operate a franchise. The conditions for awarding a franchise vary, but often rely on setting a baseline of service expectations with companies competing to pay the government the most for the privilege of operating the service (or require the least

250. For more detail, see the "History of Public Rail in America" section above.

subsidy, in the case of unprofitable lines). This is considered "competition for the market" rather than "competition in the market" exemplified by open access. Competitive tendering is intended to decrease the average price of providing a public service.

However, franchising in the UK has failed to lower public subsidy—in fact annual operating subsidy for the railroads has more than doubled since privatization and train operators' costs have only risen.[251] While these impacts are, in part, the result of the peculiarities and poor design of British Rail's fragmentation—which is discussed in more detail in above—there are still numerous challenges with franchising that should give us pause before implementing it in the United States.

For one, competitive tendering is not guaranteed. In the UK, the pool of franchise bidders has settled into an oligopoly, with little real competition for franchises, and an increasing number are awarded without competitive bids or simply operated by a public corporation.[252] Since 2012, two-thirds of contracts have been awarded without competition.[253]

A challenge presented by competitively-tendered franchises that arose in the UK is the tendency for companies to optimistically over-bid franchise premium payments at the end of the contract, with several lower payment years included to enter the business. This structure allows companies to cash in for the first few years of low premium payments and simply cease operation when they can't afford to make the premium payments they promised for the end of the contract.[254]

An important question for designing a franchise system is "who holds the risk?". The risk could be entirely placed upon the franchise holder, effectively in the form of a lease, granting them access to the tracks for a set period of time, with the responsibility of providing crews, equipment, and planning services entirely theirs—alongside any downside from a recession or natural disaster. The opposite could also be true, with the government ultimately responsible for bailing out franchisees, who themselves have little to no capital invested (this method has been disastrous for the UK).[255]

For the United States, franchises with full risk borne by the railroad franchisee would be a better fit, since unlike the UK or Europe, most of our freight network is profitable and does

251. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 20-21.

252. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 91-92; Tony Prosser and Luke Butler, "Rail Franchises, Competition and Public Service," *The Modern Law Review* 81, no. 1 (2018/01/01 2018): 29-31, https://doi.org/10.1111/1468-2230.12315.

253. Williams and Shapps, *The Williams-Shapps Plan for Rail*, 18.

254. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 79-80.

255. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 72-75.

not need public subsidy to operate. Franchisees would provide their own equipment, so as not to repeat the UK's error of fragmenting the industry into 1,000 pieces. If this approach were taken, there is a significant chance that the Class I railroads would bid for franchises on the tracks that they currently operate. An unintended consequence of a competitive bidding process, where private rail operators are involved, could be to actively worsen the cost-cutting practices of PSR. We might also see new private equity firms enter the rail market with poorly-compensated, newly-trained, non-union crews, attempting to undercut bids—a result which could be disastrous for safety and labor relations.[256]

256. This is a concern that has been raised abroad with respect to the prospect of "social dumping" by new entrants in Switzerland, discussed in the above section on the Swiss railway system.

As with open access, when franchising relies on vertical separation, it faces higher coordination costs leading to an industry with higher overall costs than one that is vertically integrated. As much has been said by the former operator of the UK's East Coast Main Line franchise, who claims that most other franchisees agree with his view that:[257]

257. McCartney and Stittle, *The Privatisation of British Rail: How Not to Run a Railway*, 74.

"the cost of operating separate infrastructure and train companies is much higher ... than if we had an integrated railway."

The higher operating and infrastructure costs resulting from vertical separation have in turn increased costs passed on to customers and taxpayers.[258]

258. Prosser and Butler, "Rail Franchises, Competition and Public Service," 33-34.

Determining how to divide the rail system into franchises presents another challenge. Railroads, as natural monopolies experiencing significant operating cost benefits from having larger networks, tend towards consolidation—evident by the current dual duopoly system we have with our private railroads. If public rail infrastructure were to be franchised for operational efficiency, we could very well end up with the same system we have now, albeit with payments from the Class Is for use of public infrastructure.

If the system is broken up into many smaller franchises, to induce competition, the rail system will immediately become less competitive with truck or air freight, counteracting the goal of shifting freight to more environmentally friendly rail. Yet the option of franchising the entire U.S. rail network as a single unit is almost unthinkable: allowing a for-profit private operator or consortium to control the entire rail network is clearly against the public interest and would require an even more intensive return to regulation.

Given these constraints, it seems that franchising may be best suited to the role that it currently plays, providing operators for state-owned Class II and III railroads where the state does not have the capacity or desire to operate them directly. Franchising the core mainline freight rail network would not only be burdensome administratively, but there is also limited evidence suggesting that it would be economically advantageous. Considering further that franchising might only entrench the profit-first ethos into our railroads, another option should be explored.

FULLY-INTEGRATED RAIL SYSTEM: PUBLIC OWNER AND OPERATOR

A horizontally- and vertically-integrated public rail system is the model that has been predominant worldwide for nearly a century. It entails one public corporation managing the underlying track infrastructure and operating the trains over it. The public railroad would be nationwide, allowing for transcontinental coast-to-coast freight service and potentially eliminating the need for some of the inter-carrier exchanges that slow down long-distance freight traffic.

An integrated railroad is able to coordinate the movement of freight more effectively through nationwide dispatching and planning.[259] Coordinated national freight planning has the potential facilitate faster exchanges and improve the speed with which freight cars move around the system. Additionally, a service-first focus, as opposed to a short-term profit focus, will allow a public operator to employ enough workers in its yards to facilitate expedient switching moves and make rail freight more competitive with trucking, even if it lowers the operating ratio in the short-term.

A study evaluating more than 20 years of data from U.S. freight railroads found that fully integrated operations provide a 20-40 percent cost advantage over vertical separation of infrastructure from operations when hauling merchandise and bulk freight.[260] An integrated railroad that combines bulk and merchandise freight has an even-more-substantial 70 percent cost advantage over two vertically-separated companies, where one moves bulk and the other merchandise. This study's findings corroborate our earlier discussion, in the

259. Tomeš, "Do European reforms increase modal shares of railways?," 149.

260. Marc Ivaldi and Gerard McCullough, "Subadditivity Tests for Network Separation with an Application to U.S. Railroads," 7, no. 1 (2008): 167, https://doi.org/10.2202/1446-9022.1143.

open access section, about the importance of economies of density. This finding must also be considered alongside the tendency for open access operators in the EU to segment along different types of freight rather than compete directly.

The ability for an integrated public railroad to cross-subsidize less profitable or at-cost traffic is another key advantage. The high fixed costs of railroad infrastructure mean that railroads must charge some customers above marginal cost in order to afford to reinvest in infrastructure and improved service.[261] A single national railroad is able to allocate a larger proportion of fixed costs to customers with a higher willingness to pay. This allows the railroad to serve customers who might otherwise ship by truck or who cannot afford higher rates close to marginal cost.

A fully integrated public rail system has benefits for infrastructure investment as well. An integrated public railroad is more likely to make long-term investments to improve service quality than any system with private involvement.[262] Because infrastructure and operations are held within the same organization, an integrated railroad is more effective at coordinating the needs of operations and customers with the planning of track improvements and reinvestment.[263] This closer, and sometimes informal, communication between operations and infrastructure departments not only allows for better planning and safer operations, but it also has the potential to minimalize added costs that might spring up during infrastructure projects due to failures in communication.[264]

For long-term planning, infrastructure investment decisions have important downstream effects on future operations, impacts that can be best planned for within an integrated railroad.[265] The ability to perform long-term planning would be a considerable change from our present private rail system in which the Class Is have only once cooperated to produce a long-term capacity plan, which they subsequently failed to implement.[266] In terms of construction, a unified public railroad could capture significant economies of scale for infrastructure projects, leading to lower overall costs and faster implementation.

Achieving an electrified national rail system with sufficient capacity for the projected growth in demand for rail over the coming decades will require implementing an aggressive

261. John D. Bitzan and Fecri Karanki, "Costs, density economies, and differential pricing in the U.S. railroad industry," *Transport Policy* 119 (April 2022): 75, https://doi.org/10.1016/j.tranpol.2022.02.012; Gómez-Ibáñez, "Open Access to Infrastructure Networks: The Experience of Railroads," 338.

262. Andreas Schöne and Philipp Kunz-Kaltenhäuser, "Track access charges in the European Union railroad sector: A consideration of company organization and institutional quality," 2022, 164, Working Paper, Institute of Economics, Ilmenau University of Technology.

263. Tomeš, "Do European reforms increase modal shares of railways?," 149.

264. Eri Nakamura and Hiroki Sakai, "Does vertical integration facilitate coordination between infrastructure management and train operating units in the rail sector? Implications for Japanese railways," *Utilities Policy* 66 (October 2020), https://doi.org/10.1016/j.jup.2020.101099.

265. P. Cantos Sánchez, "Vertical relationships for the European railway industry," *Transport Policy* 8, no. 2 (April 2001): 83, https://www.sciencedirect.com/science/article/pii/S0967070X00000391.

266. Cambridge Systematics Inc., *National Rail Freight Infrastructure Capacity and Investment Study*, 2-6.

program of electrification and double tracking along core main lines. Countries that successfully completed such programs, whether India, Russia, or Switzerland, were able to do so through the coordination of an integrated publicly owned railroad.

A public railroad also presents the greatest potential to achieve true worker input in the running of the rail system. Open access or franchise operators would likely still be owned and operated in the interest of Wall Street firms concerned with extracting maximum profit margins. By contrast, a fully public system can be set up to operate as a public benefit corporation with a board appointed to represent railroad workers, community members, shippers, and other stakeholders whose views compose the wholistic public interest. This public service model would provide for better safety-focused oversight and permit far-sighted decision-making that prioritizes optimal working conditions and quality service over short term profits.

Rather than allowing private operators to extract profits from the use of public infrastructure, an integrated public owner-operator would reinvest any earned income in infrastructure and service improvements, as seen with the Madison Railroad in Indiana, or proposed in the Plumb Plan. Over the long term, this should lead to higher quality infrastructure, enhance safety, boost the quality of rail service and reap enormous benefits for the American economy.

CONCLUSION

By now, we have well established that the current system of private ownership and operation of the railroads has failed. The Class Is are providing customers with infrequent, unreliable service. This poor service is driving customers away from rail, and the number of carloads carried by rail has fallen by 30 percent this century. The Class Is are prioritizing dividends and buybacks over capital investment. They are annually responsible for millions of hours of preventable delays to passenger trains. Rather than investing in tried-and-tested catenary electrification, which could provide operational benefits and decarbonize rail, the Class Is have opted to putz around with experimental technologies that they already know are unviable.

They have cut tens of thousands of railroad jobs, leaving workers with irregular schedules, chronic fatigue, and little-to-no work-life balance. Furthermore, as the accident rate has ticked up for the past ten years, the Class Is continue to retaliate against employees who speak up about safety concerns. They have waived Railcar inspections and locomotive repairs in the name of speed. Similarly, the Class Is have ignored community demands for cleaner locomotives in rail yards—where diesel pollution has well-documented negative health impacts on workers and community members. Instead, the railroads have transitioned towards older, more-polluting yard locomotives. Altogether, the vision that the Class I railroads offer is one of decline—sacrificing the vibrancy and potential of our rail system on the altar of extracting profit for their shareholders.

"Rather than a private duopolistic network of massive corporations only concerned with next quarter's profit, a public rail system would be democratically accountable to workers, shippers, trackside communities, and would serve the public interest."

Public ownership offers a remarkably different vision. Rather than a private duopolistic network of massive corporations only concerned with next quarter's profit, a public rail system would be democratically accountable to workers, shippers, trackside communities, and would serve the collective public interest. A unified national rail system would achieve sub-

transportation and lower costs on shippers. At the end of the day, such a system would deliver savings to the American consumer.

The Class I railroads currently extract tens of billions of dollars a year from the rail system, through dividends and buybacks. These same Class Is are years behind on crucial capital investments needed to maintain capacity on our rail network based on their own 2007 study. Rather than continuing to play this reckless waiting game with our nation's critical infrastructure, a public rail system would reinvest its income in infrastructure improvements and electrification. This reinvestment would improve operations through added capacity, more efficient and cheaper electric traction power, and greater service flexibility. It would also deliver meaningful safety improvements and better air quality for workers and trackside community members — and for all of us.

Involving workers democratically in decision-making would present a dramatic change from the Class Is' pattern of repressing workers' safety concerns and operating on bare-minimum staffing levels. Doing so could improve workers' quality of life and boost rail's long-term competitiveness through resilient staffing for frequent, reliable service. Involving workers in decision-making could also combat some of the worst safety violations present under the current system of profit-focused management.

"Maintaining quality rail infrastructure and delivering frequent, reliable service is critical to supporting small businesses, farmers, manufacturers, and putting rail back on a growth trajectory."

Maintaining quality rail infrastructure and delivering frequent, reliable service is critical to supporting small businesses, farmers, manufacturers, and putting rail back on a growth trajectory. Shifting freight to rail will alleviate highway congestion, cut down on carbon emissions, and reduce wear on roads and bridges, especially by large and heavy trucks.

A shift to public ownership is not without precedent. Public investment, ownership, and control have all been core to the development of American rail industry. The first common carrier railroad—the Baltimore & Ohio—was publicly funded, as

were many other railroads when the rail system was expanding in the 19th century.

Perhaps the greatest public contribution to the development of the U.S. rail network were the hundreds of millions of acres of land given to railroad companies on the condition that they construct rail "for the benefit of the public." The right-of-way easements granted under the various land grant acts in the late 19th century still carry a large portion of all U.S. rail traffic. Given that the Class Is are more interested in short-term profit than serving the public, it may be time for Congress to revisit the land grant acts and reallocate these rights-of-way to a public corporation.

Nationalization was critical to coordinating freight service during World War One, after private management proved incapable of cooperation. After the war, the Plumb Plan offered a bold alternative of a publicly owned, democratically managed rail system that attracted the support of the entire labor movement. By the 1970s, with railroad bankruptcies occurring left and right, Congress created Conrail to revive the Northeast's rail industry.

"A shift to public ownership is not without precedent. Public investment, ownership, and control have all been core to the development of American rail industry."

Today, publicly owned railroads continue to play a crucial role in our rail system. Amtrak and commuter railroads provide public transportation to millions of passengers all across the country, from big cities to small towns. State-owned rights-of-way maintain freight services on tracks that Class Is sought to abandon. Publicly operated port and terminal railroads provide high-quality, low-cost freight services and support economic development.

Internationally, publicly owned railroads are the norm. They offer insight into the potential benefits that a publicly owned and operated rail system could provide. Switzerland has the highest per capita rail ridership in the world, alongside a robust freight mode share—all on a fully electrified rail system. These achievements are only possible because of the high degree of coordination under integrated public ownership. Similarly, Indian Railways has succeeded in electrifying over 25,000 miles of track in 10 years, while moving the same tonnage by rail as the entire US rail network.

Building on this history, international precedent, and present need, we must look towards a new direction: that of a publicly owned rail system for the United States. There is an urgent need to transition to a sustainable, publicly accountable, worker-friendly, service-focused rail system. But this transition will not happen overnight. This White Paper seeks to rekindle a long-dormant conversation about public ownership of the railroads. Making this vision a reality will require a bold coalition of workers, shippers, trackside communities, concerned citizens, and rail passengers. The Public Rail Now campaign has begun the task of forming this coalition, but there is still much discussion and organizing that needs to take place, across the country. The time to act is now. America deserves a rail system that works for all of us.

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