# Driving Regulatory Innovation for Safer Railroading

## How Modernizing the Waiver Process at the Federal Railroad Administration Can Revolutionize Railroad Safety, Efficiency, and Resilience and Future-Proof the Regulatory Culture Across the Entire Federal Government

ALLIANCE FOR INNOVATION AND INFRASTRUCTURE

April 2025

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## Executive Summary

The United States railroad industry is critical for the American economy and the transportation of goods individuals depend on every day. The safety and efficiency of rail transport are more important today than ever, yet these are being held back by aging rules. The guiding regulations of the Federal Railroad Administration (FRA) date back to its creation almost 60 years ago. They were created with the technology and operational considerations of the day in mind, but the rules are hardly cutting-edge today. Railroads are constrained by regulations drafted in an era when computers occupied entire rooms. Because the rule-making process is time-consuming and complex, needed change can be slow, so the FRA operates a waiver process that can allow railroads to temporarily suspend sections of the many rigid and dated regulations.

While the waiver process serves as a pathway for new innovation to bypass outdated rules, even this measure has become inefficient, politicized, and lacking in transparency and accountability.

This paper analyzes the current FRA waiver process, exploring reforms that could improve supply chain integrity and resilience while advancing innovation for railroad companies well into the 21st century. Potential reforms include reducing decision-making authority from political appointees and empowering career safety professionals to enhance regulatory outcomes, provided both groups are bound by objective criteria and more transparency in decision making. Lack of public information on the Railroad Safety Board's waiver deliberations must be addressed.

Regulations must allow the rail industry to modernize, introduce effective new technology, and operate with new methods that improve safety while safeguarding against unready or ineffective practices. Lately, the political nature of the waiver process has caused numerous delays and policy reversals with changes in presidential administrations. These political dynamics often hinder timely innovation and long-term planning, particularly in critical-safety areas such as railroad operations. They also disadvantage rail against competing modes of transportation that do not face similar regulatory challenges. Recent events have made clear the need for an updated waiver process grounded in data, scientific rigor, transparency, and consistency to create enduring policies that transcend partisan debate.

The proposed framework in this report advocates for a decision-making structure where waivers are evaluated and approved by career FRA safety officials based on predetermined criteria, including safety benefits, efficiency gains, technological feasibility, and economic impact. This depoliticized approach would ensure that regulatory decisions align with evidence-based practices rather than shifting political priorities. Key elements would include standardized metrics for evaluating waiver requests, mechanisms to incorporate stakeholder input, an emphasis on fostering research and development, and an efficient approval process so that the rail industry is permitted to adapt quickly to technological and other changes without compromising safety. Such a system would enhance predictability for industry stakeholders, encouraging investments in technology and innovation while maintaining stringent safety standards.

A key component of this reform is a mechanism for preventing delays, either due to capacity limitations or political bias. Such a reform would take the form of provisional re-approvals if key verified data is submitted but no decision has been made by the conclusion of the statutory period, with a streamlined review and elongated extensions to form continuous or permanent waiver status for petitioners continually meeting preset criteria. Failure in bureaucratic review and decision-making should not impede innovation and safe operations.

A representative example that illustrates the need for reform is a case study on Automated Track Inspection (ATI). Recent ATI waivers have demonstrated measurable safety improvements by enhancing track defect detection and streamlining inspections, yet use of the technology has been held back by inconsistent FRA decision making. The delay and conflict regarding these waivers build a compelling case for embedding a more objective, data-driven framework within the FRA's decision-making process.

Addressing the waiver process is critical, as it is essential under the existing regulatory process to ensuring that railroads can incorporate new technology that improves safety and efficiency. True reform must tackle the source of the restraints. While recent Executive Order No. 14219 aims to achieve systemic reform, it is a laudable, one-time solution that if successful may still not provide enduring reform.[1] It is unreasonable to expect a complete regulatory overhaul in just a few years. To ensure long-term and continuous improvement, the waiver process itself should guide how regulations are re-evaluated.

Waiver petitions are a useful tool for determining which regulations are in need of revision, and where policy suppresses innovation. Specifically, when many waivers are granted for the same regulation, the rule in question should be flagged for review to be updated to modern language in line with performance-oriented public policy. By addressing these inefficiencies, the FRA can uphold its mission to ensure rail safety while allowing the industry to modernize and improve and compete in a marketplace consisting of alternative transportation options.

The five key recommendations provided in this report are summarized as follows:

1. **Increased transparency** on the Railroad Safety Board's membership, deliberations, and evaluation criteria would help rebuild trust in an objective, safety-driven regulatory environment.
2. **Limiting political influence** in technical safety decisions ensures that regulatory outcomes are based on data and consistent standards, not shifting political priorities.
3. **A waiver that consistently meets established safety and performance benchmarks** should be recognized as a validated practice, not treated as a temporary exception.
4. **Regulatory inaction** should never be the bottleneck preventing the adoption of proven safety and efficiency advancements, necessitating provisional approval for continued waivers.
5. **When exceptions become the rule**, it's a clear indicator that it's time to rewrite the rule and modernize outdated regulatory frameworks.

## Introduction

Railroads have been critical in shaping the nation's history and advancing national commerce and economic expansion into the future. The construction of the transcontinental railroad was a landmark achievement in American history, driving a massive production boom that enabled the efficient land transport of valuable minerals and resources to the west. Railroads were essential for arms production in World War II, transporting raw materials across the nation quickly and efficiently.[2] As E-Commerce has evolved alongside advancements in intermodal freight logistics, rail has maintained its centrality to economic security.

While total route-miles of U.S. railroads have declined since peaking in 1916, more recently, railroad efficiency and capacity have increased to serve the nation's evolving needs for the movement of raw materials and finished goods, and more.[3] Today, the rail network transports approximately 28 percent of all U.S. freight by ton-miles, and 40 percent of intercity ton-miles.[4,5] That means transporting approximately 1.5 billion tons of freight each year.[6] Rail transport is vital for agriculture, construction, energy, manufacturing, and delivery of consumer products. The bulk of this is done by a few large railroad companies, with many smaller, regional, or short-line companies undertaking the remainder.

Two-thirds of railroad miles are operated by Class I railroads, which also generate 94 percent of the revenue.[7] There are currently six Class I railroads in the North American rail network: BNSF Railway, CSX Transportation, Norfolk Southern Railway (NS), Union Pacific Railroad (UP), Canadian National Railway (CN), and Canadian Pacific Kansas City (CPKC).[8, 9] The outsized proportion of revenue and freight movement also positions these companies to have a greater capacity and responsibility for research and development.

Although railways are often perceived as a stagnant industry, ongoing innovation is critical to improving safety. Despite recent media attention, train derailments have been steadily decreasing for decades, falling from 1,351 in 2015 to 1,054 last year – a 22 percent safety improvement.[10] This fits within a wider 40 percent reduction in derailments since 2005 and a continued one percent decline in the most recent decade. Passenger and employee fatalities and injuries have also declined significantly.[11] Work remains to be done, and the rail industry is investing heavily in new smart technology and innovations.

> "...the rail industry is investing heavily in new smart technology and innovations."

Various Automated Track Inspection (ATI) technologies have been developed to detect possible track geometry deficiencies more accurately, while Positive Train Control (PTC) systems were developed by industry stakeholders and subsequently mandated by Congress to prevent human-error accidents. Despite these and many other improvements, the adoption and testing of certain innovations have been hampered by outdated FRA regulations, and an increasingly inconsistent waiver process has failed to serve as the remedy it was intended to be.

## Regulatory Background

The FRA was established, along with many of its governing regulations, alongside the U.S. Department of Transportation (DOT) in 1966 in order to develop "national transportation policies and programs conducive to the provision of **fast, safe, efficient, and convenient** transportation at the lowest cost consistent therewith and with other national objectives, including the efficient utilization and conservation of the Nation's resources."[12] Before this, railroads were governed by the Interstate Commerce Commission and a myriad of different regulations or attempts at regulation at the local, state, and federal levels, creating an inconsistent environment without complete standardization or safety measures.[13]

Today, the safety of railroad operations are primarily governed by Title 49 of the Code of Federal Regulations. With delegated authority from Congress, and within the Administrative Procedure Act (APA), the FRA can adopt additional administrative rules to carry out its present-day mission "to enable the **safe, reliable, and efficient** movement of people and goods for a strong America, now and in the future."[14]

Sometimes the President or Congress directs a regulation to be promulgated or revised, while other times the agency initiates its own rulemaking in response to incidents, market changes, or by its own proactive initiative. However, in virtually all cases, rulemaking takes multiple years, with final rules being published many years after a directive or initiative. Between 1980 and 2015, the average time between an executive or congressional directive and a final rule at FRA was 1,165 days, while the average time between a notice of proposed rulemaking and final rule was 493 days.[15]

The FRA has historically adopted a similar number of regulations as other agencies. Between 1980 and 2015, the FRA adopted 162 final rules across all regulatory disciplines.[16] While the quantity of regulations can inhibit innovation, the nature and quality of the regulations has the most determinative effect. The FRA has tended to be overly prescriptive in its rulemaking, and lags behind other transportation agencies in advancing performance-based regulations.[17] Providing goals and objectives for companies to meet works in concert with industry priorities to yield greater innovation, ultimately delivering on the regulation's purposes, whether for safety, efficiency, or reliability.

In the past several decades, increasing regulations has been shown to have a limited impact on improvements in safety, which instead has been driven primarily by technological improvements and market incentives.[18, 19] Both new rules and failure to revise or remove older rules can actually have the effect of inhibiting safety. When this is the case, companies forced to comply with outdated rules must appeal to the agency to operate without such rules restraining their operations.

To allow worthy new practices and technology to see adoption, the FRA has a waiver process for companies to apply for temporary relief from a particular regulation under certain guidelines.[20] Approximately 100 to 125 waiver requests, block signal applications, and other special petitions are handled by the FRA each year.[21] The FRA waiver requests receive high scrutiny, and in recent years, the industry has seen unexpected denials as well as review and decisions being delayed beyond the statutorily required review period.

Railroad companies routinely apply for waivers, seeking to turn research and development into proven real-world practices that improve their safety and efficiency. The FRA states that it "investigates and analyzes the facts and circumstances of each petition to determine whether granting the requested relief or issuing the requested approval is justified."[22] This is ultimately based on a determination of whether the request is "in the public interest and consistent with railroad safety."[23] Both political influence and subjective interpretation can affect decision making. Decision letters are published to explain waiver approvals or denials. While FRA may take into account public comments and may include more details about its evaluation, the actual decision-making process is often quite opaque. There is no public record of discussion, no transcripts, and little other mandated transparency about how decisions are made.[24]

Petitioners first submit a detailed request for the FRA, specifying the regulations from which they seek relief and making their argument.[25] After receiving a submission, the FRA publishes a notice to solicit comments from the public and interested parties. Both submissions and comments are viewable by the public for transparency. Then, the FRA reviews the petition and comments, using technical analysis to evaluate the impact on safety and public interest. The final decision is made by the Railroad Safety Board, which then publishes its decision. The Railroad Safety Board is an administrative body within the FRA, mentioned in regulations but delegated authority by a 2010 directive.[26] The membership and function of this board remains unclear, with potential development across different administrations. The board composition set out by Order includes the following officials within FRA:

> a. Chair and Deciding Official. The Associate Administrator for Railroad Safety/Chief Safety Officer, a Deputy Associate Administrator for Railroad Safety, or another senior executive designated in writing by the Associate Administrator for Railroad Safety/Chief Safety Officer.
>
> b. Legal Officer. An attorney designated in writing by the FRA Chief Counsel.
>
> c. Advisory Members. Three FRA safety managers (designated in writing by the Associate Administrator for Railroad Safety/Chief Safety Officer), including at least one individual who is currently serving, or has formerly served, as a Regional Administrator or a Deputy Regional Administrator.[27]

Members of the board are not public, and it is unclear to what extent it is made of career employees and political appointees. Whether one individual can hold multiple roles, what voting power each has, and if political appointees can ultimately make unilateral decisions are unclear and have likely evolved across administrations.[28]

The definition of "in the public interest and consistent with railroad safety" leaves significant room for interpretation. While objective safety data has historically been used, more recent agency actions signal a shift away from this. As recently as 2024, the FRA proposed updating the definition of "in the public interest" to require that,

> the proposed request demonstrates positive factors including, but not limited to, **empowering workers, ensuring equity, protecting the environment,** creating robust infrastructure, enabling adaptability and resiliency, bringing legacy systems up to current standards, allowing for experimentation consistent with railroad safety, providing opportunities to collaborate, ensuring interoperability integration across transportation modes, and the well-being of the public at large.[29]

To meet the newly proposed definition, FRA suggested petitioners should directly address principles within the definition, including:

> To show that a proposal is "in the public interest," FRA proposes that a petitioner could provide evidence that the regulatory relief requested **would not eliminate jobs or eliminate required visual inspections**, but would **add additional positions**, or improve the existing positions.[30]

The agency's own recommendations to meet its proposed definition make clear that innovation and objective safety advancements are not the sole objective, but that other factors and preferences like employment levels are. Ultimately, this proposed definition was withdrawn, but this demonstrates the degree to which political influence can drive interpretation and decision making.[31]

The extent to which decisions have varied across presidential administrations has raised questions over the role of political favor in safety decisions. In the past several years, various petitions have been left unaddressed for months by the FRA. Prolonged waiver uncertainty has even culminated in litigation, including BNSF suing the FRA for denying a waiver.[32] The Fifth Circuit Court of Appeals ruled in favor of BNSF, determining that the FRA's justification for denying the waiver was "inadequate."[33]

The need to involve the courts in the waiver process has significantly weakened trust and cooperation between the FRA and railroads. The denial of many innovation-focused waivers has led to many accusations of anti-innovation bias and has led to further legal action. In November 2024, various individual railroad companies, with support from the Association of American Railroads (AAR), initiated litigation against the FRA for failing to act on overdue waiver requests, all of which were for railroad technologies.[34] The railroads' primary purpose was to force action, articulating that the FRA had failed to decide on multiple waivers within the mandated period.

While layers exist to the issue, with potential political influence and limited transparency around the board making waiver decisions, the root of the issue remains a dated and prescriptive regulatory code and waiver process intended to act as a relief valve, but which is not functioning properly. The issue is best encapsulated by a fight over a particular technology – Automated Track Inspection (ATI) systems – but the basic concept of advancing innovation, investing in research and development, and allowing the industry to change in response to conditions over time, remains a challenge.

The issue is not whether companies can develop and even deploy technology. They can do these things, but must still comply with dated, prescriptive rules; rules which also force resource allocation and dampen investment in research for new safety technology or deployment of new technology and equipment –

> Railroads are permitted unlimited use of automated track inspection systems that rely on lasers, machine vision, and other technology to find track geometry defects. But without a waiver from the FRA, railroads cannot simultaneously scale back the required frequency of visual inspections of main lines where the automated systems are deployed.
>
> Class I railroad pilot programs have shown that the track defect rate is lowered significantly through a combination of frequent automated or autonomous track inspection and a reduced visual inspection schedule that allows track inspectors to focus their efforts on switches, diamonds, and rail joints.[35]

To highlight the need for specific waiver reform that focuses on objective safety data while fostering increased transparency, Aii explores the recent fight over ATI. This case serves as a foundation for the benefits of adopting performance-based regulation. Identifying a mechanism for addressing outdated regulations is then proposed.

## Case Study: Automated Track Inspection

One of the most notable developments in railroad safety technology is Automated Track Inspection systems. ATI is an acronym that covers a broad set of technologies, including automated laser and sensor technology to measure track geometry and check for potential defects. While track geometry vehicles have been around for nearly a century, alongside significant private investment and innovation, the FRA helped promote the development of some of the modern generation of ATI technology. Amtrak began using remote autonomous monitoring technology in 2000, and by 2008, the FRA ran a test program installing related technology.[36]

Advancements and innovations in these systems have led to the ability to detect more track defects and more efficiently than manual inspections, but are not suitable for all track issues, some of which a worker conducting visual inspection is best. Nevertheless, the current regulations are centered around visual inspections with specific inspection frequency and guidelines for inspectors while treating technology as a secondary consideration.

Currently, qualified inspectors canvass most tracks twice every week.[37] Inspectors must meet FRA standards and traditionally used hand tools to manually measure tracks, though this has changed in recent years to include improved measurement tools. Even so, technology is clearly deemphasized and secondary in regulatory requirements.

> Each inspection shall be made on foot or by traversing the track in a vehicle at a speed that allows the person making the inspection to visually inspect the track structure for compliance with this part. However, mechanical, electrical, and other track inspection devices may be used to supplement visual inspection.[38]

| Class of track | Type of track | Required frequency |
|---|---|---|
| Excepted track, and Class 1, 2, and 3 track | Main track and sidings | Weekly[1] with at least 3 calendar days' interval between inspections, or before use, if the track is used less than once a week, or twice weekly with at least 1 calendar day interval between inspections, if the track carries passenger trains[2] or more than 10 million gross tons of traffic during the preceding calendar year. |
| Excepted track and Class 1, 2, and 3 track | Other than main track and sidings | Monthly with at least 20 calendar days interval between inspections. |
| Class 4 and 5 track | | Twice weekly with at least 1 calendar day interval between inspections. |

*Table from Code of Federal Regulations 49 CFR 213.233.*[39]

ATI systems work differently than manual inspections. In some cases, a special service vehicle is equipped with track geometry systems and used to perform ATI inspections.[40] In other cases, ATI systems are mounted on rail-cars or locomotives to take track measurements as a train is in motion. Put another way, some ATI systems can measure track conditions in real-time as fully-loaded trains travel over them during the ordinary course of operations, improving efficiency and reducing traffic delays from track inspections.[41, 42] The real-time aspect is critical because the technology continuously collects vast quantities of data in real operational conditions, but this must be analyzed to determine what, if any, remedial action is warranted. Even with this analysis, the technology collects more information faster and with greater detail than visual inspections.

> In some cases, if permitted by FRA waiver, the use of such technologies [ATI] **can increase efficiency by allowing railroads to perform fewer visual inspections** (i.e., inspections by a human alone) on the territory where they operate. These efficiency benefits may be especially notable if the technology does not require dedicated track time to operate.[43]

ATI ultimately aims to supplement manual inspections by using advanced sensors to measure track conditions in real-time and providing advanced data that improves safety and operational efficiency.[44] The FRA has both invested in and praised ATI for its safety and efficiency value.[45] To further advance ATI deployment, FRA facilitated a pilot program with dozens of participating railroads between 2009 and 2018.[46] That pilot included participation of 28 companies. After this program concluded, individual railroad companies began seeking waivers to continue using and expanding ATI in their operations.

In July 2018, BNSF was the first to apply for a waiver to test ATI on its own track.[47] Generally, safety technology is not restricted from testing, but BNSF requested a waiver to test ATI with decreased numbers of manual inspections and to better understand the number of defects the system could identify. In particular, the waiver sought relief from 49 CFR 213.233(c), which mandates frequent visual inspections.[48] After a round of clarification, the waiver was approved by the FRA in just 57 days but was quickly challenged in court by the Brotherhood of Maintenance of Way Employees Division (BMWED), a labor union including railway inspectors.[49] Despite a union-led legal challenge and disruptive government shutdown, FRA's approval was upheld.

Soon after BNSF received its initial waiver approval in 2018, other Class I railroads applied for waivers suspending the same regulation to test their own ATI technology. While the companies sought to implement the technology on different sections and lengths of track and under different arrangements, in each of their petitions for relief from § 213.233(c), railroads put forward data to demonstrate numerous safety benefits of blending ATI with reduced visual inspections, where identification of track defects increased significantly. Notably, while the number of visual inspections decreased during BNSF's ATI program, the number of defects found by visual inspectors stayed the same.[50, 51]

**Table 2. Identification of Track Geometry Defects, Systemwide, 2016-19**

| Year | Defects/100 Inspection Miles (Visual) | Defects/100 Inspection Miles (Geo Car) |
|---|---|---|
| 2017 | 0.0137 | 6.98 |
| 2018 | 0.0106 | 3.72 |
| 2019[12] | 0.0124 | 2.92 |

*Identification of Track Geometry Defects, BNSF Incoming Waiver Petition*[52]

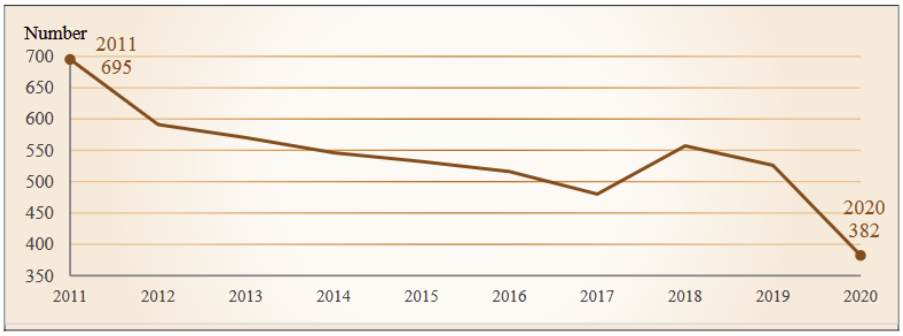
Identifying defects enables prompt scheduling of preventative maintenance, which leads to lower defect detections in subsequent years precisely because of the high efficacy of the sensors. In simpler terms: ATI is extremely effective at finding defects. Finding defects means fixing defects.

> "Notably, while the number of visual inspections decreased…the number of defects found by visual inspectors stayed the same."

Over time, this means fewer total defects to find. According to BNSF's petition, "…manual inspections found 4,796 geometry defects in the course of inspecting 39.2 million miles of track. Over that same period, geometry cars found 64,657 geometry defects while covering 97% fewer inspection miles."[53]

These programs were largely successful, and the FRA praised ATI systems in multiple reports in 2021.[54, 55] There is good reason to conclude that implementation of ATI systems have contributed to the continued decline in track-caused derailments over the last decade.

**Table 2: Number of Track-Caused Reportable Derailments, Calendar Years 2011 to 2020**




*Source: FRA safety data.*

*November 2021 FRA Report to Congress*[56]

In 2020, BNSF applied for an extension of its ATI program, which was partially approved in January 2021.[57] However, a further extension of ATI into two new routes was denied by the FRA in March 2022, despite BNSF meeting the FRA's waiver conditions for safety on the initially approved routes.[58, 59]

> FRA notes that in carrying out this task, the RSAC will need to consider data not only from the ATI Test Program underlying BNSF's existing waiver in this docket, but data from the relevant ATI Test Programs that are still underway on multiple railroads. FRA finds that short-circuiting this evaluation process on individual railroads is not in the public interest and consistent with railroad safety at this time.[60]

This denial sparked a multi-year legal battle in federal court. The Fifth Circuit Court of Appeals forcefully concluded in March 2023 that the FRA did not sufficiently articulate an explanation for the denial, stating:

> …the agency has barely articulated any basis at all. The paucity of reasoning is especially glaring in the face of the agency's statutory **mandate to prioritize safety**. BNSF has made evidence-based claims that ATI is safer and more efficient than visual inspection alone. The implementation of ATI pursuant to the prior waiver appears to have been an **unqualified success**. The FRA is thus duty-bound to provide further justification for its rejection of the technology's expansion.[61]

By remanding the case, the court required FRA to reconsider its denial and provide more justification. In response, the FRA denied BNSF's request again, using similar arguments but expounding on the RSAC project working towards uniformity in railroad regulations as directed by Congress.[62] BNSF challenged the decision once more, and the Fifth Circuit Court of Appeals again ruled in the railroad's favor in June 2024. This time directly ordering the FRA to approve the waiver expansion and explicitly holding FRA's "decision to be arbitrary and capricious."[63] Despite succeeding in keeping the program, appealing through the legal system cost BNSF multiple years of testing.

Other companies faced similar challenges. Norfolk Southern (NS) had its initial ATI testing program approved in 2020 and had received permission from the FRA on two occasions to proceed with the program, but it was unexpectedly rejected in March 2022, with the rationale that, "FRA finds that continuation of the Test Program will not likely result in any new,

significant data."[64] NS also submitted a waiver petition in March 2021 that would allow ATI testing across its entire network, but this waiver was also denied one year later.[65] The change in approach by the FRA was stark, and its decision making lacks transparency. A summary chart helps visualize the recent history.

| Railroad | Docket No. | Waiver Request Date | FRA Decision | FRA Decision Date | Days to Issue Decision[66] | Notes |
|---|---|---|---|---|---|---|
| BNSF | Docket No. FRA-2018-0091 | July 31, 2018 | Approved | October 24, 2018 | 57 | This program was approved for extension 5 times over the next 2 years, ultimately operating until January 2021 |
| NS | Docket No. FRA-2019-0099 | November 1, 2019 | Approved | January 27, 2020 | 87 | |
| | | July 19, 2021 | Denied | October 13, 2021 | 86 | Before the denial, the program was approved for extension twice by the FRA. |
| CSX | Docket No. FRA-2020-0013 | November 25, 2019 | Approved | March 3, 2020 | 99 | This program was approved for extension once by the FRA. |
| CN | Docket No. FRA-2020-0014 | December 11, 2019 | Approved | April 3, 2020 | 114 | This program was approved for extension twice by the FRA. |
| UP | Docket No. FRA-2020-0031 | March 23, 2020 | Approved | April 28, 2020 | 36 | This program was approved for extension once by the FRA. |
| CP (Now CPKC) | Docket No. FRA-2020-0056 | July 2, 2020 | Approved | July 22, 2020 | 20 | This program was approved for extension once by the FRA. |
| BNSF | Docket No. FRA-2020-0064 | July 28, 2020 | Partially Approved | January 19th, 2021 | 175 | Multiple rounds of information sharing was done before a decision was made. |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | June 15, 2021 | Denied | March 21, 2021 | 86 | This request was for an expansion of the previously approved program. |
| | | March 15, 2023* | Denied | June 21, 2023 | 98 | *Date of Court ruling for FRA to remand March 2021 decision. |
| | | July 21, 2024* | Approved | Septembe r 3, 2024 | 44 | *Date of Court ruling for FRA to approve BNSF's waiver. |
| NS | Docket Number FRA-2021-0044 | April 30, 2021* | Denied | March 21, 2022 | 325 | *Original waiver submitted on March 22 but revised on April 30. |

The recent history of ATI is summarized well in BNSF legal arguments: "...the FRA engendered reliance interests by championing ATI and then changing its overall attitude toward ATI without formally announcing its now [sic] policy or reasoning through it."[67] While these waivers are only needed because of outdated prescriptive regulations, the change in attitude by the agency approving and denying waivers demonstrates the clear need for reform to the waiver process itself. Greater visibility into the waiver review process is a central aspect of needed transparency, and enduring reform must focus on clear and objective requirements for waivers. Once those are achieved, the waiver process itself should serve as a radar system for which regulations to reform in line with clear performance-oriented public policy.

While FRA decision makers bear the responsibility for their own actions, a key external factor to the conflict is the opposition to ATI systems from the BMWED maintenance-of-way union, whose members include track inspectors. ATI systems are not intended to fully replace visual inspectors, who still have a significant role in identifying and addressing defects as well as performing types of inspections ATI cannot accomplish. However, it is true that increased adoption of ATI decreases the need for certain types of visual inspections at present rates, and that this can save both time and money for railroads.

Innovation has always changed the needed employment numbers for the railroads, and the same innovation has simultaneously improved safety by replacing manual tasks with technology.[68, 69, 70] Rail employment peaked in 1920, when more route-miles and share of inter-city ton miles were vastly higher than today, and while jobs and positions were required that are simply accomplished today by technology and equipment (e.g., the dangerous role of brakemen becoming redundant with locomotive-controlled remote air brakes).

In alignment with those external and political priorities, but as a continuation on the agency's history of utilizing more regulation without refining or revising existing rules, FRA made a proposed rule change in 2024 that would mandate the use of ATI for busy railroads.[71]

While framed as "codifying industry practices," this proposal layers new regulation on old, without regard for its economic impact or potential employee safety benefits from removing certain personnel from on-site risks.

> The changes would require certain railroads to **supplement visual inspections** by operating a Track Geometry Measurement System (TGMS) at specified minimum frequencies on certain types of track. The rule would also set timeframes by which the railroads must act to remediate any track defects identified.[72]

The proposed rule notes that Class I railroads already conduct such inspections voluntarily, and that the rule is primarily a formalization of existing standards across the industry. Track geometry measurement systems would be required at least three times a year for track that handles passengers, hazardous materials, or exceeds transport of more than 10 million gross tons annually, but it would not decrease visual inspections.[73]

Despite this apparent promotion of ATI technology, the fact that the rule adds extra inspection burdens without considering the increased efficiency and cost has led to criticism from railroads and industry stakeholders.[74] By keeping in place old and prescriptive rules around visual inspections while mandating new technology, the agency proposes redundancy while limiting the potential for new investments in technology. The RSAC, which is made up of numerous railroads, unions, and related industry professionals, was not consulted on the proposed rule change.[75] The AAR argues that the proposed rule is contradictory to previous ATI tests and studies, where a decrease in visual inspections coupled with ATI improved overall safety.[76] Additional complaints include the rule effectively restricts the use of Hi-Rail vehicles for track inspections and that the requirement that track defects detected using track geometry measurement tools must be reported to the FRA within one hour is unrealistic.[77] Overall, the reaction to a rule that ultimately aims to expand ATI has been overwhelmingly negative from railroad companies,[78] while BMWED has commended the proposed rule change and urges its adoption without delay.[79]

At the same time, the FRA also proposed the separate rule change, discussed above, to define *in the public interest* and was not shy in highlighting the agency's desire to protect old regulations and employment.

> Generally, FRA expects that a petition that would reduce the level of existing required human visual inspections or that would not meet current FRA requirements would not be consistent with railroad safety under the proposed § 211.1(b)(7). Thus, to demonstrate that a petition is consistent with railroad safety, the petition must show that the proposed process or technology will overcome that expected reduction in safety by being as safe or safer than the existing regulation would require.[80]

Despite being withdrawn, this language demonstrates the need for reform toward objective safety, efficiency, and reliability criteria that directly relate to FRA's mission.

Unfortunately, the conflict over ATI systems has undermined safety, efficiency, and cooperation. Nearly every waiver approved for ATI faced strong opposition from the BMWED, which actively fought implementation and sought delays. As the FRA has shifted its position on ATI, both the waiver process and underlying regulatory rules have been revealed not to advance safety in the industry or the public goals of the agency.

## Policy Considerations and Recommendations

While an overhaul of many regulations may be the ideal reform, it is impractical in the short term. Waivers therefore remain vitally important to the industry and to the public that benefits from safe and efficient rail transport, so there is a clear public interest in providing relief from outdated policy. Through a reformed waiver process, Aii proposes a method that not only encourages innovation but achieves and surpasses the objectives of the regulations in question and shifts the entire regulatory culture toward performance-oriented goals, higher safety standards, and increased efficiency.

With the reauthorization of Surface Transportation scheduled for 2026, now is the ideal time to evaluate the effectiveness of current regulations and consider changes that also foster greater transparency. Reforms will be called for directly within the FRA, at the executive level, and through legislation by Congress to effectuate the scale of needed reforms and ensure permanence to them.

Waivers are an important part of advancing railway safety and testing new technology, but the current system is fatally flawed. Waivers are intended to be approved if the request is "in the public interest and consistent with railroad safety." Recently the FRA has, at times, not operated under these criteria and its decision making lacks visibility.

To rebuild trust and ensure that effective safety waivers are not ignored, Aii proposes five key reforms.

### 1.) Increase Transparency in the Waiver Review Process

Government transparency is more crucial than ever, and the Railroad Safety Board can strengthen its credibility by publicly documenting its board members and providing more information on the waiver process. The Railroad Safety Board should improve transparency by:

- Publicly disclosing board members and other FRA personnel involved in waiver decisions
- Making deliberation transcripts, evaluation documents, and decision rationales publicly available
- Clarifying the role of political appointees in the waiver process

While public comment periods and decision letters already exist, further transparency would rebuild trust among industry stakeholders. Although political appointees can bring valuable outside perspective, they should not influence technical safety decisions. Limiting political appointees to non-voting roles—or clearly documenting how their input affects outcomes—would enhance both legitimacy and accountability.

**2.) Limit Political Influence in Safety Decision-Making**

Waivers should be approved or denied based on predetermined, objective criteria for safety, efficiency, technological feasibility, and economic impact. To protect the integrity of regulatory decisions, waiver approvals should be based on safety data and objective analysis—not political priorities.

- The FRA should formalize the role of career safety professionals as the primary decision-makers
- Political appointees should have advisory, not decisive, roles in technical safety matters

Decisions grounded in data ensure consistency across administrations and encourage innovation without compromising safety. This should also streamline the review and ultimate approval of worthy waiver requests by ensuring petitioners know what objective data to submit and narrowing the Railroad Safety Board's review to verifying objective preset criteria.

**3.) Make Waivers Continuous When Criteria Are Met**

Approved waivers should remain in effect as long as the applicant continues to meet pre-established benchmarks for safety, efficiency, and data reporting.

- Upon initial approval, waivers should include measurable performance criteria
- Applicants maintaining compliance should not face unnecessary renewals or reapplications, but quick reapprovals with targeted oversight
- Extensions should become progressively longer, with a pathway to permanence if benchmarks are continuously met

It is unclear why the continuance, renewal, or extension of a waiver that has demonstrated continued effective results would be denied, as seen with various ATI programs.[81] An approved safety program should be able to operate under a continuous or permanent waiver so long as the petitioner continues to provide data demonstrating that it has measurably improved safety outcomes. Many waivers already have conditions on data sharing and can be denied for extension in cases where those conditions are not met.[82] After an initial approval, subsequent approvals should be for longer lengths of time, forming effectively a permanent waiver. This system rewards proven safety performance and prevents regressions due to administrative churn.

**4.) Guarantee Provisional Approval When FRA Exceeds Review Deadlines**

If the FRA fails to respond to a waiver renewal or extension within the required timeframe, the petitioner should receive **automatic provisional approval**—provided they submit verified evidence of continued compliance.

- Waivers should be considered approved by default after the statutory review period (e.g., 9 months), unless FRA issues a denial with clear justification within 30 days
- This change would prevent regulatory inaction from stifling innovation or jeopardizing safety programs already delivering results

The waiver process should act as a facilitator for innovation while safeguarding against exploitation rather than defending and perpetuating outdated regulations. Also important is the response time of the FRA. There were several instances when the FRA did not make a decision within nine months of receipt of petition, as is required by regulations.[83] If a waiver petition is not approved within this time period, and if the railroad provides evidence of addressing certain preset metrics, then it should have provisional approval to continue operating under the existing waiver unless or until FRA denies the petition with a written explanation of the denial as it relates to the preset metrics within 30 days.

**5.) Mandate Review of Frequently Waived Regulations**

If three or more separate applicants are granted waivers for the same regulation, that rule should be flagged for review within one year.

- This process would ensure performance-based public policy replaces outdated prescriptive rules
- Objective waiver criteria would guard against misuse of this trigger
- Broad uptake of similar waivers is a clear signal that the underlying rule no longer reflects modern practices or technologies

When every Class I railroad must apply for a waiver to get around a regulation to improve safety, this signals that the regulation itself is likely outdated or unneeded. Aii proposes an automatic review of any regulation that is approved for waiver by three or more separate applicants. The objective criteria for waiver approval will safeguard this process from being taken advantage of. If multiple companies rush to get new waivers that are then approved, it only proves the point that the underlying rule is in need of reform.

## Conclusion

Railroads are vital to the nation's economy and public safety. Allowing and encouraging innovation within the railroad industry is essential for the nation's future. Yet many of the current challenges within the industry stem from lack of transparency by the regulating agency, strict adherence to out-of-date policies, and inconsistent processes for receiving relief from those policies. These demand attention from policymakers and action to modernize both rulemaking and industry outcomes.

The goal of regulatory reform should be to encourage innovation and increase transparency while upholding safety standards. Regulations are based on the best available knowledge at the time of creation, but these frameworks must evolve alongside technological progress. Rather than focusing exclusively on a large-scale overhaul of the FRA's regulations, this report proposes improvements to the waiver process to facilitate and identify further reforms in the future. By enacting a performance-based waiver process that limits political influence and focuses on objective criteria for safety and efficiency, this approach represents a transparent mechanism for modernizing regulations.

Reforms to the waiver process may be best discussed and adopted as part of the 2026 Surface Transportation Reauthorization package, while continuing efforts to comply with EO 14219 should similarly evaluate rules and processes at the FRA. Innovation that demonstrably enhances safety and is supported by data should not be dismissed due to political pressure or outdated regulations. A complete overhaul is going to take a long time and until that happens waivers will remain a vitally important pathway to innovation. With changes to the waiver process, the FRA can reaffirm its position as a fair and independent regulator and strengthen the rail industry for the future of freight transport, achieving its mission to the letter.

## Appendix A: Delegation of Authority

*From the 2010 FRA Order on Railroad Safety Board*

DELEGATION OF AUTHORITY. The Chair of the Safety Board, **with the concurrence of the Legal Officer on matters of law**, is delegated the authority to:

a. Dismiss matters not properly brought before the Safety or not within the Safety Board's jurisdiction.

b. Grant or deny petitions for permanent or temporary waiver or exemption from the Federal railroad safety laws or regulations.

c. Grant or deny applications for special safety approvals to the extent procedures and authority for disposition of those approvals are not otherwise provided for by regulation or by other FRA Orders.

d. Approve or deny a railroad's request to perform testing involving a waiver or exemption from a Federal railroad safety law or regulation.

e. Decide applications for approval of material modification or discontinuance of a signal system under 49 CFR Part 235.

f. Re-delegate to the Director, Office of Safety Assurance and Compliance; the Director, Office of Safety Analysis; or a Regional Administrator, authority to act on specified matters (e.g., one-time movements of defective equipment) under general supervision of the Safety Board.

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clear evidence that accidents declined after the 1980 Staggers Rail Act. It is noteworthy that when the railroads were considerably less regulated and while great manpower was still called for prior to many modern technologies and practices, rail safety regulation did improve safety significantly in the era before the Staggers Act. Today, safety regulation has become less relevant for improving safety after market incentives, and some safety rules may even reduce safety by stifling innovation.

[20] The FRA grants waivers for varying durations based on risk assessment, with experimental or pilot programs typically operating under a 1-year waiver. For more proven technology or practices, the FRA may grant waiver durations of up to 5 years. For constantly safe and proven waivers, the FRA may consider approving a permanent waiver, though this is quite rare.

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[23] United States Code. (n.d.). *General authority* (49 U.S.C. § 20103). U.S. House of Representatives. https://uscode.house.gov/view.xhtml?hl=false&edition=prelim&req=granuleid%3AUSC-1999-title49-section20103&num=0.

[24] A public docket is available at Regulations.gov for each waiver that lists relevant documents, including the original petition, supporting materials, public comments, and the decision letter. However, the Railroad Safety Board deliberations are not part of this public resource.

[25] *Supra* note 21.

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[28] See Appendix A. Railroad Safety Board Delegation of Authority.

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[30] Id. (emphasis added)

[31] Federal Railroad Administration. (2024). Federal Railroad Administration's Procedures for Waivers and Safety-Related Proceedings [withdrawal]. Federal Register, 89(250), 85895–85909. https://www.regulations.gov/document/FRA-2024-0033-0007

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# Author

Benjamin Dierker, JD, MPA
*Executive Director*, Alliance for Innovation and Infrastructure
Owen Rogers
*Public Policy Associate*, Alliance for Innovation and Infrastructure

*For more information or inquiries on this report, please contact the Aii Media Coordinator at info@aii.org*

# Recommended Citation for this report

Dierker, B. & Rogers, O. (April, 2025). *Driving Regulatory Innovation for Safer Railroading: How Modernizing the Waiver Process at the Federal Railroad Administration Can Revolutionize Railroad Safety, Efficiency, and Resilience and Future-Proof the Regulatory Culture Across the Entire Federal Government*. Alliance for Innovation and Infrastructure. Aii.org.

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The Alliance for Innovation and Infrastructure (Aii) is an independent, national research and educational organization working to advance innovation across industry and public policy. The only nationwide public policy think tank dedicated to infrastructure, Aii explores the intersection of economics, law, and public policy in the areas of climate, damage prevention, eminent domain, energy, infrastructure, innovation, technology, and transportation.

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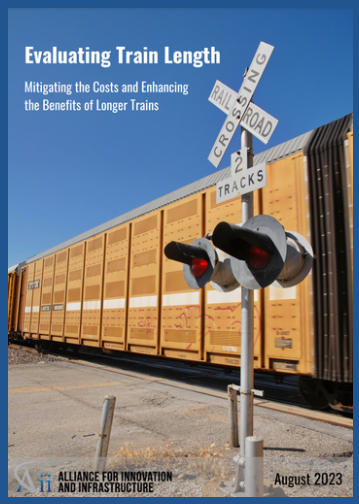


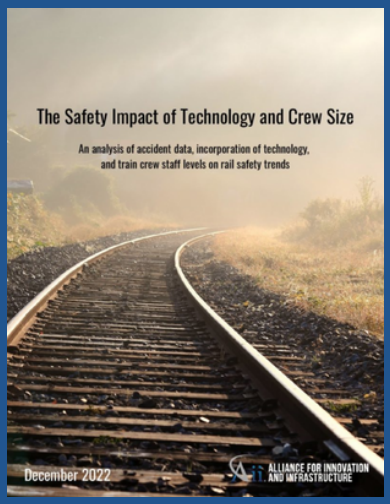


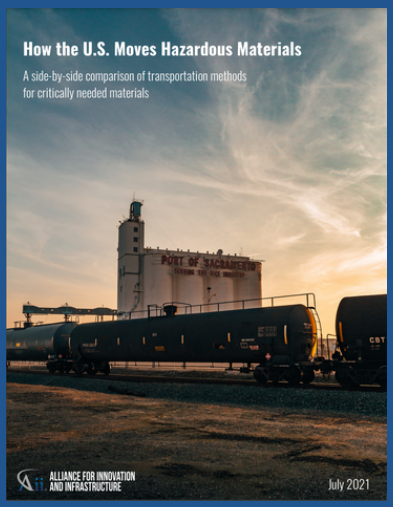


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