

The Wrong Track: How the Railway Safety Act Risks Derailing Innovation

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ICLE Issue Brief 2026-05-04

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Executive Summary

American freight railroads are safer today than at any point in their history. Accident rates, hazardous-material releases, and employee fatalities have all declined over the past two decades, driven largely by private investment and innovation.

The Railway Safety Act, introduced after the 2023 East Palestine derailment, would impose prescriptive mandates, including crew-size requirements, federal detector standards, expanded inspections, and accelerated tank-car replacement timelines. These measures assume additional regulation will improve safety.

This issue brief argues the Act is unlikely to do so. It mandates sweeping rulemakings without cost-benefit analysis, relies on rigid requirements that risk locking in current technology, and includes provisions—especially the two-person crew mandate—that lack a clear evidentiary basis. It also expands regulation in ways that dilute focus on the highest-risk operations and may exceed the industry’s capacity to comply.

The costs are substantial. Compliance could reach billions of dollars, while the scale of accident reduction needed to justify those costs is implausible given current trends. Law & economics research further shows that regulatory accumulation in freight transportation raises costs, reduces output, and weakens innovation-driven growth.

A better approach is performance-based regulation: set measurable safety targets and allow firms flexibility in how to achieve them. Policymakers should preserve voluntary industry initiatives and support smaller carriers through targeted funding.

Freight rail safety is improving. The priority should be to sustain that progress, not impose mandates that risk undermining it.

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I. Introduction: A Safer Industry Meets Rising Regulatory Pressure

American freight railroads are safer today than at any point in their history. Over the past two decades, the train accident rate per million train-miles has fallen by more than 38%,¹ hazardous-materials train accident rates have declined by at least 61%,² and employee on-duty fatalities reached an all-time low of seven in 2023.³ Bureau of Labor Statistics injury-rate data place rail transportation squarely in the middle of the American industrial landscape—comparable to general freight trucking and retail trade, and well below air transportation, warehousing, and urban transit.⁴ Freight rail remains one of the safest modes of surface freight transport in the United States, and the gap continues to widen.

Political demand for sweeping new railroad safety mandates has nevertheless surged. The February 2023 derailment of Norfolk Southern Train 32N in East Palestine, Ohio—caused by an overheated wheel bearing⁵—pushed rail safety to the center of public debate. Congress responded by introducing and reintroducing the Railway Safety Act across two successive sessions.⁶

This issue brief argues that the proposed Railway Safety Act, despite its rhetorical appeal, suffers from three fundamental deficiencies. First, it mandates sweeping federal rulemakings without requiring cost-benefit analysis, in tension with Executive Order 14192’s deregulatory framework.⁷ Second, its prescriptive mandates risk locking in current technology and discouraging the innovation that has driven the industry’s safety gains. Third, several prominent provisions—particularly the two-person crew mandate—appear driven less by safety evidence than by political economy concerns. A

¹ Fed. R.R. Admin., U.S. Dep’t of Transp., *Train Accident (Not at Highway-Rail Crossings) Summary*, <https://data.transportation.gov/stories/s/dsufxcni> (last visited May 1, 2026) (showing incidents fell from 4.139 per million miles in 2005 to 2.554 in 2025).

² Fed. R.R. Admin., U.S. Dep’t of Transp., *Rail Safety Overview Report (1.12)*, <https://data.transportation.gov/stories/s/Rail-Safety-Overview-Report-1-12-/dsufxcni> (last visited May 1, 2026) (reporting 39 hazmat releases in 2005 and 15 in 2025); see also Ass’n of Am. R.R.s., Press Release, *FRA 2023 Data Affirms Rail’s Strong, Sustained Safety Record* (Mar. 4, 2024), <https://www.aar.org/news/fra-2023-data-affirms-rails-strong-sustained-safety-record> (claiming a roughly 75% reduction based on FRA data not currently available).

³ Fed. R.R. Admin., U.S. Dep’t of Transp., *Employee on Duty Fatalities, Injuries, and Illnesses*, <https://data.transportation.gov/stories/s/Employee-on-Duty-Fatalities-Injuries-and-Illnesses/khzxvxu4> (last visited Apr. 24, 2026) (showing a 68% decline since 2005).

⁴ Bureau of Lab. Stats., U.S. Dep’t of Lab., *Table 1: Incidence Rates of Nonfatal Occupational Injuries and Illnesses by Industry and Case Type, 2024*, <https://www.bls.gov/iif/nonfatal-injuries-and-illnesses-tables/table-1-injury-and-illness-rates-by-industry-2024-national.htm> (last visited May 1, 2026) (reporting incidence rates per 100 full-time workers: rail transportation (3.4), general freight trucking (3.1), retail trade (3.0), construction (2.2), grocery stores (4.1), air transportation (6.5), urban transit systems (6.1), and warehousing and storage (4.8)).

⁵ Nat’l Transp. Safety Bd., *Norfolk Southern Railway Derailment with Subsequent Hazardous Material Release and Fires, East Palestine, Ohio* (Feb. 3, 2023), NTSB/RIR-24/05, <https://www.ntsb.gov/investigations/AccidentReports/Reports/RIR2405%20CORRECTED.pdf>.

⁶ Railway Safety Act of 2023, S. 576, 118th Cong. (2023); Railway Safety Act of 2025, H.R. 928, 119th Cong. (2025); Railway Safety Act of 2026, S. 3903, 119th Cong. (2026); see also Press Release, Sen. Maria Cantwell, *Cantwell, Husted, Colleagues Reintroduce Bipartisan Railway Safety Act* (Feb. 24, 2026), <https://www.commerce.senate.gov/2026/2/cantwell-husted-colleagues-reintroduce-bipartisan-railway-safety-act>.

⁷ *Unleashing Prosperity Through Deregulation*, Exec. Order No. 14,192, 90 FED. REG. 9,065 (Feb. 6, 2025).

better approach would recognize the industry's substantial safety gains and avoid layering on regulations that do not address identifiable problems. Short of that, policymakers should adopt performance-based regulation that sets measurable safety targets while preserving flexibility to innovate.

The Railway Safety Act also offers a useful case study in how political-economy dynamics can produce net-harmful regulation. A high-profile incident generated intense public demand for action. Concentrated interest groups then shaped the legislative response, while policymakers largely overlooked a factual record of improving safety and ongoing innovation. The result is a bill that would likely impose billions in compliance costs without demonstrated safety benefits, even as the industry's baseline trajectory remains positive.

This pattern is not unique to rail policy. It reflects a broader regulatory tendency: policymakers confronting complex, technical systems often focus on prescriptive solutions crafted under political pressure, rather than evaluating how those mandates may displace more effective, innovation-preserving alternatives. Error-cost analysis and regulatory forbearance provide a more reliable framework for achieving public-interest goals without foreclosing beneficial market adaptation.

Recent academic work underscores the stakes. Bentley Coffey, Patrick McLaughlin, and Pietro Peretto show in a multi-industry endogenous-growth model that per-unit transportation costs constrain innovation-driven growth; policies that raise those costs—including cumulative regulation—can dampen the translation of manufacturing productivity gains into aggregate output.⁸ Their companion empirical paper finds that a 5% increase in federal regulatory restrictions on a freight transportation mode raises unit costs by 0.8–2.3% and reduces quantities shipped by 1.4–4.1%, with effects that persist and compound over time.⁹ In this context, the Railway Safety Act is likely to do more harm than good.

II. The Railway Safety Act: Structure, Mandates, and Tensions

The Railway Safety Act first appeared as S. 576 in March 2023, introduced by Sen. Sherrod Brown (D-Ohio) in the immediate aftermath of the East Palestine derailment. The Senate Commerce Committee approved the bill in May 2023, but it never reached the floor during the 118th Congress.¹⁰ Lawmakers reintroduced it in the House in February 2025 (H.R. 928) and again in the Senate on Feb. 24, 2026 (S. 3903), led by Sen. Jon Husted (R-Ohio) and cosponsored by Sens. Maria

⁸ Bentley Coffey, Patrick A. McLaughlin & Pietro F. Peretto, *Transportation, Innovation and Growth* (Working Paper, Apr. 9, 2026), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6444398.

⁹ Bentley Coffey, Patrick A. McLaughlin & Pietro F. Peretto, *Regulation and the Cost of Moving Goods* (Hoover Inst. Econ. Working Paper, Mar. 20, 2026), <https://www.hoover.org/sites/default/files/research/docs/26108-McLaughlin-Coffey-Peretto.pdf>.

¹⁰ S. 576, 118th Cong. (2023); see also Cong. Budget Off., *Cost Estimate for S. 576* (Sept. 2023), <https://www.cbo.gov/publication/59947>.

Cantwell (D-Wash.), Roger Marshall (R-Kan.), Eric Schmitt (R-Mo.), Tammy Baldwin (D-Wis.), Amy Klobuchar (D-Minn.), Bernie Moreno (R-Ohio), and John Fetterman (D-Pa.).¹¹

The bill's core provisions include a mandatory two-person crew for all Class I freight trains; a federal framework governing the spacing, maintenance, sensitivity, and data protocols for wayside defect-detection systems; an expanded definition of "high-hazard trains" (HHT) using a five-car threshold for flammable gases; accelerated tank-car retrofit and phaseout timelines; expanded pre-departure and locomotive inspection requirements; state notification requirements for hazardous-material movements; and higher civil penalties.¹²

These mandates sit uneasily alongside the current administration's deregulatory framework. Executive Order 14192, issued Jan. 31, 2025, directs agencies to identify at least 10 existing regulations for repeal for every new rule they propose.¹³ For fiscal year 2025, the order further requires that the total incremental cost of all new regulations be "significantly less than zero."¹⁴

An executive order does not bind Congress, but it highlights a clear policy divide. The administration has articulated a pro-growth, deregulatory agenda, while some congressional constituencies continue to favor prescriptive mandates. That tension raises a central question: whether additional command-and-control safety rules make sense when, as discussed *infra*, the industry's safety record continues to improve under the current framework.

The Railway Safety Act would require the U.S. Department of Transportation (DOT) and the Federal Railroad Administration (FRA) to issue a series of new rules with significant compliance costs. This is precisely the type of regulatory expansion Executive Order 14192 seeks to prevent. The interaction between the two is not merely theoretical. If the FRA attempted to comply with both simultaneously, it would need to repeal a substantial number of existing rules and demonstrate a net reduction in regulatory costs—an implausible outcome given the scope of the Act's mandates.

Much of the political momentum behind the Railway Safety Act rests on the perception that train derailments are a growing crisis. A commonly cited comparison notes more than 1,300 U.S. derailments in 2019, compared with just 73 in the European Union, even though EU rail traffic spans more than five times as many rail-kilometers.¹⁵ That comparison obscures more than it reveals.

¹¹ H.R. 928, 119th Cong. (2025); S. 3903, 119th Cong. (2026).

¹² S. 3903, 119th Cong. §§ 102–109 (2026).

¹³ Exec. Order No. 14,192, § 3, 90 Fed. Reg. at 9,065, *supra* note 7.

¹⁴ *Id.* § 3(b).

¹⁵ See Alex N. Press, *As Rail Executives Grow Richer, Train Derailments Have Become Commonplace*, JACOBIN (Feb. 2023), <https://jacobin.com/2023/02/train-derailments-east-palestine-norfolk-southern-profits>; see also Gregory Labelle, *Letter: Does the U.S. Even Care About Rail Safety? The Numbers Suggest It Doesn't*, LEHIGHVALLEYLIVE.COM (Apr. 11, 2023), <https://www.lehighvalleylive.com/opinion/2023/04/does-the-us-even-care-about-rail-safety-the-numbers-suggest-it-doesnt-letter.html>. U.S. figures derive from FRA Form 6180.54 accident/incident data; see Fed. R.R. Admin., Off. of Safety Analysis, *Train Accidents and Rates*, <https://safetydata.fra.dot.gov/officeofsafety/publicsite/query/TrainAccidentsFYCYWithRates.aspx>. EU figures derive from

First, roughly 60% of U.S. derailments occur in rail yards at very low speeds—the functional equivalent of parking-lot fender benders.¹⁶ Mainline derailments, which pose the greatest risk to public safety, remain at historic lows. Second, the EU uses different reporting methodologies, emphasizing rates per billion train-kilometers and often excluding comparable low-severity yard incidents. Third, the underlying systems differ fundamentally. The U.S. network is freight-dominant and moves far more tonnage per rail-kilometer, while European systems are overwhelmingly passenger-oriented. Direct comparisons between the two are not meaningful.

The long-term trend is clear. Federal Railroad Administration data show equipment-caused train accidents have declined 38% since 2005,¹⁷ and axle- and bearing-related accidents have fallen roughly 81% since the early 1980s. The agency attributes much of this progress to the widespread adoption of wayside hot-bearing detectors and related monitoring technologies.¹⁸ These gains have occurred under the existing regulatory framework. Any policy change should therefore account for how new mandates might disrupt the innovation that produced them.

III. Private Incentives and Prescriptive Safety Regulation

Prescriptive safety regulation typically rests on a familiar market-failure story: firms underinvest in safety because they do not fully internalize the social costs of accidents, and government mandates must close the gap. The Railway Safety Act adopts that logic. The freight rail industry's response after East Palestine, however, complicates the narrative.

Within months of the derailment, Class I railroads deployed roughly 1,000 additional wayside detectors, lowered bearing-temperature alert thresholds, adopted industry-wide predictive analytics, and expanded first-responder access to real-time railcar data—investments that outpaced any plausible federal rulemaking.¹⁹ These actions reflect strong private incentives: liability exposure, reputational capital, network reliability, and the economics of asset preservation. In this

Eurostat; see Eurostat, *Railway Safety Statistics in the EU*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Railway_safety_statistics_in_the_EU.

¹⁶ Fed. R.R. Admin., U.S. Dep't of Transp., *Accident/Incident Data* (2019), <https://data.transportation.gov/stories/s/2ju5-8zxb> (showing 784 yard derailments out of 1,344 total derailments in 2019).

¹⁷ Fed. R.R. Admin., *supra* note 2.

¹⁸ Fed. R.R. Admin., U.S. Dep't of Transp., Off. of Rsch., Dev. & Tech., *An Implementation Guide for Wayside Detector Systems* (2019), <https://railroads.dot.gov/elibrary/implementation-guide-wayside-detector-systems>.

¹⁹ See Ass'n of Am. R.Rs., *Freight Railroads Announce Key Safety Measures in Drive to Zero Accidents* (Mar. 2023), <https://www.aar.org/news/freight-railroads-announce-key-safety-measures-in-drive-to-zero-accidents> (announcing approximately 1,000 additional hot-bearing detectors, a 170°F alert threshold, and expanded trending analysis); Ian Jefferies, Ass'n of Am. R.Rs., Statement for the Record Before the Subcomm. on R.Rs., Pipelines & Hazardous Materials, H. Comm. on Transp. & Infrastructure 3 (July 23, 2024), <https://www.congress.gov/event/118th-congress/house-event/LC73449/text> [hereinafter Jefferies Statement] (citing FRA and AAR data and describing implementation of voluntary commitments, including expansion of AskRail to more than 2.3 million first responders); Fed. R.R. Admin., U.S. Dep't of Transp., Safety Advisory 2023-01: Evaluation of Policies and Procedures Related to the Use and Maintenance of Hot Bearing Wayside Detectors, 88 FED. REG. 13,376 (Mar. 3, 2023); see also Cong. Rsch. Serv., *East Palestine, OH, Train Derailment and Hazardous Materials Shipment by Rail: Frequently Asked Questions*, R47435 (2024).

environment, the case for additional prescriptive regulation weakens. The proposed mandates would largely codify existing practices, but at higher cost and with less flexibility.

The industry has also committed to developing a shared standard for bearing-trending analysis—an algorithmic approach that identifies degradation patterns before absolute temperature thresholds trigger alerts.²⁰ This trajectory suggests that the Act does not correct a market failure. It instead layers compliance costs onto an already-functioning incentive structure, with effects that extend beyond the industry's balance sheet.

The Minnesota Wayside Detector System Study, a legislatively mandated assessment completed in March 2026, reinforces this point.²¹ The study surveys roughly five wayside-detection technologies deployed on Minnesota's rail system and 11 additional detector types in use across North America, including hot-bearing detectors, wheel-impact load detectors, acoustic bearing detectors, dragging-equipment detectors, and machine-vision inspection portals. It also examines emerging systems such as distributed fiber-optic sensing and light detection and ranging (LiDAR)-based infrastructure monitoring.²²

The study's cost-benefit analysis proves especially revealing. It models three detector-spacing scenarios—10, 15, and 20 miles—applied statewide to nearly 1,000 miles of Class II and Class III track. In each case, recurring operating costs exceed quantified safety benefits, producing a negative cumulative net impact over a 10-year horizon.²³ Because a state legislature commissioned the study, not the industry, its findings carry particular weight. They undermine the premise that federally mandated detector standards would generate net benefits, especially for smaller carriers.

Federal Railroad Administration inspections point in the same direction. In January 2024, the FRA published its High-Hazard Flammable Train Route Assessment, summarizing inspections of more than 2,600 wayside detectors across 28 railroads. Inspectors found that railroads generally monitored detector performance closely, though they identified issues at roughly 120 sites, including calibration drift and inverted transducers.²⁴ The broader lesson is straightforward: voluntary industry standards

²⁰ CPCS Transcom for Minn. Dep't of Transp., *2025 Wayside Detector System Study* (2026), <https://www.lrl.mn.gov/docs/2026/mandated/260603.pdf> [hereinafter MnDOT CPCS Report]; see also Ass'n of Am. R.Rs., *Freight Railroads Announce Key Safety Measures in Drive to Zero Accidents* (Mar. 2023), <https://www.aar.org/news/freight-railroads-announce-key-safety-measures-in-drive-to-zero-accidents>.

²¹ MnDOT CPCS Report, *supra* note 20.

²² *Id.* §§ 2.1, 3.1 (cataloguing 16 distinct wayside detector technologies); *id.* at 34 (describing distributed fiber-optic sensing); *id.* (describing light detection and ranging (LiDAR)).

²³ MnDOT CPCS Report, *supra* note 20, ch. 6, *Economic and Industry Impacts*, at 53–58 (modeling 10-year cost-benefit scenarios at 10-, 15-, and 20-mile detector spacing on Class II and III track and finding negative cumulative net impacts across all scenarios).

²⁴ Fed. R.R. Admin., U.S. Dep't of Transp., *High-Hazard Flammable Train Route Assessment & Legacy Tank Car Focused Inspection Program: Summary Report* (Jan. 22, 2024), https://railroads.fra.dot.gov/sites/fra.dot.gov/files/2024-01/HRA%20Final%20Report_01.22.24.pdf.

often precede federal regulation, not the reverse, because firms can adapt more quickly than regulators.

IV. Structural and Analytical Defects in the Railway Safety Act

Even setting aside the political-economy dynamics discussed above, the Railway Safety Act suffers from a set of analytical and structural defects that warrant separate attention. Its core provisions impose prescriptive, uniform mandates rather than risk-weighted, performance-based approaches that an error-cost framework would favor. The bill also omits the cost-benefit discipline that typically constrains major rulemakings. Several key terms—from the five-car threshold in the expanded high-hazard-train definition to fixed detector-spacing and two-person-crew requirements—appear to reflect negotiated compromises rather than empirical evidence about where risk actually concentrates.

These design choices have concrete consequences. They direct safety capital toward specifications likely to become obsolete before regulators finalize implementing rules. They shield incumbent detection technologies from competition by next-generation alternatives. They also impose fixed compliance costs on smaller carriers that do not track marginal risk on their networks. The result is a regulatory regime that treats a dynamic engineering problem as a static checklist—one that predictably produces less safety, less innovation, and more concentrated harm among the least well-resourced participants than the performance-based alternatives discussed above.

A. The Absence of Cost-Benefit Constraints

The most fundamental objection to the Act is structural. It mandates sweeping DOT rulemakings without requiring the agency to show that each rule's benefits justify its costs. This approach departs from the longstanding cost-benefit framework set out in OMB Circular A-4—reinstated in its 2003 form by Executive Order 14192—which requires rigorous analysis for economically significant regulations.²⁵ More importantly, the Act's prescriptive mandates would limit the Federal Railroad Administration's ability to make evidence-based regulatory decisions. Even if the agency's own analysis shows that a requirement's costs exceed its safety benefits, the statute would require the agency to proceed.

Available estimates suggest that the compliance burden would run into the billions over a decade. One analysis places the cost of the detector-spacing provision alone between \$1.1 billion and \$2.2 billion.²⁶ The 2008 Positive Train Control mandate—a single, comparable requirement—cost U.S. freight railroads roughly \$10 billion to \$15 billion over its implementation period.²⁷ The Act would

²⁵ *Unleashing Prosperity Through Deregulation*, *supra* note 7; Off. of Mgmt. & Budget, *Circular A-4* (2003).

²⁶ Michael F. Gorman, *Rail Safety Policy After East Palestine*, REGULATION (Summer 2023), <https://www.cato.org/regulation/summer-2023/rail-safety-policy-after-east-palestine>.

²⁷ Cong. Rsch. Serv., *Positive Train Control (PTC): Overview and Policy Issues*, R42637 (2018), <https://www.congress.gov/crs-product/R42637>; see also Ass'n of Am. R.Rs., *Positive Train Control*, <https://www.aar.org/issue/positive-train-control> (estimating industry PTC investment at approximately \$15 billion).

layer multiple additional mandates on top of that baseline, with cumulative costs that could rival or exceed the PTC experience.

To justify expenditures of that magnitude, proponents would need to show that the Act prevents a comparable volume of accidents. Before adopting such costly measures, Congress should at least direct the Congressional Research Service or the FRA to estimate the likely compliance burden.

Empirical benchmarks highlight the gap. An analysis of FRA accident data commissioned by the North Carolina Department of Transportation finds that the average property-damage cost of a rail incident is about \$122,000 in 2020 dollars.²⁸ Even high-severity derailments—those involving roughly 40 or more loaded freight cars—reach only about \$2.6 million.²⁹

A simple break-even calculation illustrates the mismatch. Assume total compliance costs comparable to Positive Train Control—about \$10 billion over a decade. Using the \$122,000 average property-damage figure, the Act would need to prevent roughly 80,000 incidents to cover its costs. Even valuing each prevented event at \$2.6 million, the Act would still need to prevent nearly 4,000 severe derailments over the same period. Neither scenario is plausible. Mainline derailments on Class I railroads number in the low hundreds each year, and the long-term trend continues to decline. No realistic set of prescriptive mandates could reduce incidents at the scale required to satisfy this cost-benefit threshold.

The empirical literature reinforces these concerns. Recent work finds that regulatory accumulation in freight transportation suppresses investment in productivity-enhancing innovation: a 5% increase in regulatory restrictions raises unit shipping costs by 0.8–2.3% and reduces freight volumes by 1.4–4.1%, with effects that compound over time.³⁰ These are not one-time adjustment costs; they represent persistent constraints on economic growth. The broader literature reaches similar conclusions. One estimate finds that federal regulation added since 1949 reduced annual U.S. output growth by about one percentage point on average, resulting in a 28% reduction in output by 2005.³¹

B. Misaligned Risk Targeting in Core Provisions

Expanding the HHT definition to include flammable gas may respond to East Palestine. The Act's five-car threshold, however—far below the existing standard of 20 or more continuous tank cars or 35 total—rests on no clear risk assessment and would sweep a far larger set of trains into heightened regulation.³² Existing voluntary “Key Train” practices, codified in Circular OT-55-R, already impose

²⁸ Steven Bert et al., *The Comprehensive Cost of Rail Incidents in North Carolina*, Report No. FHWA/NC/2020-44, at 7 & app. fig. 45, at A-19 (Inst. for Transp. Rsch. & Educ., N.C. State Univ., Dec. 2020).

²⁹ *Id.* at 7 fig. 6 & app. figs. 45 & 47, at A-19, A-21.

³⁰ Coffey, McLaughlin & Peretto, *Regulation and the Cost of Moving Goods*, *supra* note 9.

³¹ John W. Dawson & John J. Seater, *Federal Regulation and Aggregate Economic Growth*, 18 J. ECON. GROWTH 137 (2013), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2223315.

³² Compare 49 C.F.R. § 171.8 (current HHFT definition), with S. 576 § 102 (proposed HHT definition).

50-mph speed limits and siding requirements on the highest-risk movements, including those carrying toxic-inhalation-hazard materials, large volumes of hazmat, or spent nuclear fuel.³³ Lowering the threshold risks shifting attention away from genuinely high-risk operations toward routine freight traffic, imposing costs without corresponding safety gains.

The Act's expanded locomotive and pre-departure inspection requirements reflect a prescriptive, process-oriented approach. They dictate how railroads must inspect equipment rather than what safety outcomes they must achieve. Nothing in the record suggests that more manual inspections would have prevented the East Palestine derailment, which resulted from a bearing failure that developed between automated detector readings, not from an inspection lapse.³⁴

C. Prescriptive Design and Innovation Suppression

The regulatory-design literature has long identified the limits of this approach. Cary Coglianese and David Lazer distinguish among technology-based regulation, which specifies means; performance-based regulation, which specifies ends; and management-based regulation, which requires firms to design their own safety systems to a specified vision.³⁵ Performance-based and management-based approaches generally outperform prescriptive mandates because they preserve flexibility and encourage efficient solutions. Railroads have already deployed acoustic bearing detectors, machine-vision portals, and trending-analysis algorithms. But the Federal Railroad Administration's existing prescriptive framework has not adapted to allow these technologies to satisfy regulatory requirements, effectively reducing the return on safety innovation and likely discouraging further investment.

The Act's provisions establishing federal standards for detector thresholds, spacing, and data protocols pose a particular risk to innovation. The relevant technology remains in flux. The Minnesota study identifies five wayside-detector types currently deployed in the state, 11 additional types in use elsewhere in North America, and a set of emerging technologies—including distributed fiber-optic sensing for landslide and rockfall detection, light detection and ranging (LiDAR)-based infrastructure monitoring, and IoT-enabled remote-condition systems—many still in pilot-project phases.³⁶ A federal rule written today would codify 2026-era technology. Given the Federal Railroad Administration's multi-year rulemaking timelines, the resulting standards could become obsolete before they take effect.

Positive Train Control offers a cautionary example. Congress mandated PTC in 2008, locking in a technological specification before the system had fully matured. Implementation ultimately cost the

³³ Ass'n of Am. R.Rs., *Recommended Railroad Operating Practices for Transportation of Hazardous Materials*, Circular OT-55-R (eff. July 1, 2022), <https://www.aar.org/wp-content/uploads/2022/07/2022-07-01-OT-55-R-CPC-KBD.pdf>.

³⁴ Nat'l Transp. Safety Bd., *supra* note 5.

³⁵ Cary Coglianese & David Lazer, *Management-Based Regulation: Prescribing Private Management to Achieve Public Goals*, 37 LAW & SOC'Y REV. 691, 693–96 (2003), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=297162.

³⁶ MnDOT CPCS Report, *supra* note 20, figs. 2 & 10, at 5–6 & 16–17, §§ 3.2.4–3.2.5, at 32, 34.

industry roughly \$10 billion to \$15 billion and required repeated statutory deadline extensions.³⁷ The mandate imposed substantial costs and delays while foreclosing potentially superior alternatives.³⁸ The Act's detector and tank-car provisions risk repeating that pattern.

Coffey, McLaughlin, and Peretto's growth model explains why this matters beyond railroads. In their framework, transportation is an integral component of production, and per-unit transportation costs set a lower bound on market prices and returns to innovation. When prescriptive mandates raise those costs, they do more than reallocate resources within the transportation sector; they weaken the innovation-growth feedback loop across the broader economy.³⁹ Technology-freezing regulation in freight rail thus carries macroeconomic consequences.

D. Tank Car Mandates and Capacity Constraints

Section 110 illustrates similar design flaws. It accelerates the phaseout of older-generation tank cars in certain Class 3 flammable-liquid service, setting a primary deadline of Dec. 31, 2027, with a one-year fallback to Dec. 31, 2028 if the secretary determines that manufacturing or retrofit capacity is insufficient. Section 110(b) directs the secretary to remove or revise any conflicting deadlines immediately, and Section 110(d) requires a Government Accountability Office (GAO) review of manufacturing and retrofit capacity within 18 months of enactment.

This acceleration largely duplicates a transition already in progress. Bureau of Transportation Statistics data show that compliance with DOT-117 standards rose from 56% in 2021 to 59% in 2022, with about 6,914 additional cars built or retrofitted in 2023—a trajectory that would converge on the current statutory deadline of May 1, 2029 without further intervention.⁴⁰ At most, the Act advances compliance by roughly 17 months. Section 110(b)'s directive to revise conflicting deadlines also risks creating a regulatory gap by voiding existing schedules before new ones take effect, introducing uncertainty into fleet planning and capital investment.

Capacity constraints compound the problem. The Bureau of Transportation Statistics reports that certified facilities produced or retrofitted about 6,914 tank cars in 2022, reflecting the system's practical annual throughput.⁴¹ Compressing the deadline to December 2027 would require the industry to process the remaining noncompliant fleet at a pace well above demonstrated capacity. If

³⁷ Jerry Ellig & Patrick A. McLaughlin, *Preventing a Regulatory Train Wreck: Mandated Regulation and the Cautionary Tale of Positive Train Control* (Mercatus Ctr., Working Paper, June 2016), <https://www.mercatus.org/media/57556/download>.

³⁸ *Id.*

³⁹ Coffey, McLaughlin & Peretto, *Transportation, Innovation and Growth*, *supra* note 8.

⁴⁰ Railway Safety Act of 2026, S. 3903, 119th Cong. § 110(a), (c), (d) (2026); Bureau of Transp. Stat., U.S. Dep't of Transp., *Fleet Composition of Rail Tank Cars Carrying Flammable Liquids: 2023 Report to Congress* (Sept. 2023), https://www.bts.gov/sites/bts.dot.gov/files/2023-09/BTS_Tank_Car_Report_To_Congress_9_13_2023.pdf (reporting monthly production rates); Cong. Rsch. Serv., *Freight Rail Safety Issues in the 119th Congress*, R47911 (2025) (summarizing industry concerns about accelerated retrofit timelines in current Railway Safety Act proposals).

⁴¹ Bureau of Transp. Stat., U.S. Dep't of Transp., *Fleet Composition of Rail Tank Cars Carrying Flammable Liquids: 2023 Report to Congress* v-vi (Sept. 2023), https://www.bts.gov/sites/bts.dot.gov/files/2023-09/BTS_Tank_Car_Report_To_Congress_9_13_2023.pdf.

that compression leads to equipment shortages or service disruptions, it would impose costs on shippers and consumers without clear incremental safety benefits, given that safer tank-car designs are already entering the fleet through market-driven replacement.⁴²

E. The Two-Person Crew Mandate

The Act's two-person crew mandate presents a similar evidentiary gap. The Federal Railroad Administration concluded in 2019 that it "cannot provide reliable or conclusive statistical data" on whether one-person crews are safer or less safe than multiple-person crews.⁴³ The agency reversed course in its 2024 final rule without introducing new statistical evidence, relying instead on qualitative judgments about redundancy.⁴⁴ The mandate would override collective-bargaining agreements and eliminate the operational flexibility railroads use to tailor staffing to route conditions, traffic density, and available technology. Its primary effect would be to preserve employment levels—a legitimate policy goal in some contexts, but one better addressed through collective bargaining than through safety regulation.

V. A Performance-Based Alternative

If prescriptive mandates are the wrong tool, what should replace them? The regulatory-design literature and the railroad industry's recent experience point to a performance-based approach.

First, the Federal Railroad Administration should adopt performance-based regulation. Instead of prescribing detector spacing, crew size, and inspection procedures, the agency should set measurable safety targets—derailments per million train-miles, hazmat release rates, bearing-failure rates—and allow railroads to determine how best to achieve them. Marc Scribner finds the FRA has been "highly prescriptive" and "slow to adopt performance-based alternatives," and calls for a systematic shift toward outcome-oriented regulation.⁴⁵

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Third, smaller carriers need targeted support, not unfunded mandates. The Minnesota study shows that detector mandates would impose net losses on rural short-line railroads. Existing programs—the

⁴² *Id.*

⁴³ Train Crew Staffing, 84 FED. REG. 24,735, 24,741 (May 29, 2019), <https://www.govinfo.gov/content/pkg/FR-2019-05-29/pdf/2019-11088.pdf>.

⁴⁴ Train Crew Size Safety Requirements, 89 FED. REG. 25,502, 25,508 (Apr. 9, 2024), <https://www.federalregister.gov/documents/2024/04/09/2024-06625/train-crew-size-safety-requirements>.

⁴⁵ Marc Scribner, *Toward Performance-Based Transportation Safety Regulation*, COMPETITIVE ENTER. INST. (Mar. 2017), <https://cei.org/studies/toward-performance-based-transportation-safety-regulation>.

Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program, Infrastructure for Rebuilding America (INFRA) grants, and state initiatives such as Minnesota's Short Line Infrastructure Maintenance Tax Credit—can help smaller carriers adopt safety technologies at a pace consistent with their financial capacity.⁴⁶

Finally, the macroeconomic evidence supports regulatory restraint. Coffey, McLaughlin, and Peretto find that regulatory accumulation in freight transportation reduces labor, fuel, and capital productivity across all major freight modes. Their counterfactual simulations show that these costs do not remain within the regulated firms; they propagate through the supply chain, raising prices, reducing shipment volumes, and weakening the innovation-driven growth process. Performance-based regulation that limits prescriptive rule accumulation, preserves investment incentives, and allows railroads to allocate resources toward the highest-return safety technologies would advance both safety and economic growth.

VI. Conclusion

The Railway Safety Act responds to a real tragedy. But sound regulatory design requires more than urgency and good intentions. The Act imposes sweeping prescriptive mandates without cost-benefit justification, in tension with Executive Order 14192's deregulatory framework. It targets risks imprecisely, substitutes uniform rules for evidence-based prioritization, and would require the Federal Railroad Administration to proceed with rulemakings even where costs exceed benefits.

These design flaws carry predictable consequences. The Act risks locking in current-generation technology, discouraging the innovation that has driven decades of safety gains, and imposing fixed compliance costs that fall hardest on smaller carriers. It would layer billions of dollars in new mandates onto an industry where accident rates, hazmat releases, and equipment-related failures have all declined over time under the existing framework. Its most visible provision—the two-person crew mandate—lacks a clear evidentiary basis and reflects political compromise more than demonstrated safety need.

The broader lesson extends beyond rail policy. Prescriptive, command-and-control regulation often treats dynamic engineering and operational problems as static compliance exercises. In doing so, it can displace more effective, innovation-preserving approaches while introducing economy-wide costs. As the law & economics literature shows, regulatory accumulation in freight transportation raises per-unit costs, suppresses productivity, and weakens the innovation-growth process that underpins long-run economic performance.

A better approach is available. Performance-based regulation would set clear, measurable safety targets—such as derailments per million train-miles or hazmat release rates—while allowing railroads to determine how best to meet them. Policymakers should preserve the voluntary, industry-led initiatives that have already accelerated safety improvements, continue to rely on the FRA's

⁴⁶ MnDOT CPCS Report, *supra* note 20, ch. 6.

collaborative advisory process, and provide targeted support to smaller carriers through existing funding programs. This framework aligns incentives, encourages technological progress, and directs resources toward the highest-return safety investments.

Freight rail safety is improving. The central policy challenge is not to react reflexively to high-profile incidents, but to sustain and accelerate that progress. The Railway Safety Act, as currently structured, risks doing the opposite—imposing large, certain costs in pursuit of uncertain and unquantified benefits.