

**DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION**

**DOCKET NO. FRA-2025-0127
PERMITTING USE OF VIRTUAL SIMULATION FOR PERIODIC
REFRESHER TRAINING ON BRAKE SYSTEMS
NOTICE OF PROPOSED RULEMAKING**

**COMMENTS OF
THE ASSOCIATION OF AMERICAN RAILROADS AND
THE AMERICAN SHORT LINE AND REGIONAL RAILROAD ASSOCIATION**

The Association of American Railroads (AAR) and the American Short Line and Regional Railroad Association (ASLRRA) (jointly, the Associations), on behalf of themselves and their member railroads, submit the following comments in support of the Federal Railroad Administration's (FRA's) July 1, 2025, Notice of Proposed Rulemaking (NPRM), which proposes to revise 49 CFR § 232.203(b)(8) to allow railroads to use three-dimensional virtual simulation to satisfy the periodic refresher training requirement for employees that perform brake system inspections, tests, or maintenance.¹

Statement of Interest

AAR is a trade association whose membership includes freight railroads that operate 83% of the line-haul mileage, employ 95% of the workers, and account for 97% of the freight revenues of all railroads in the United States; and passenger railroads that operate intercity passenger trains and provide commuter rail service. ASLRRA is a national trade association representing the interests of about 600 short line and regional railroad

¹ "Permitting Use of Virtual Simulation for Periodic Refresher Training on Brake Systems," Proposed Rule, 90 Fed. Reg. 28667 (July 1, 2025).

members in legislative and regulatory matters. Short lines operate 47,500 miles of track in the United States, or approximately 29% of the national freight network. The members of the Associations will be directly affected by the proposed changes because they must comply with part 232, and the proposed rule would incorporate several longstanding waivers that have proven to be in the public interest and consistent with railroad safety.

Introduction

The proposed rule would allow railroads to conduct virtual simulations as part of their periodic refresher training programs to satisfy the “hands-on” component of the training requirement in § 232.203(b)(8). Virtual simulation technology places a user into a virtual scenario where the user must perform brake inspection functions as if the user was in the field. The user is then marshalled through necessary inspection points across various car and component designs to simulate a Class I brake test. As noted by one railroad in its recent petition to renew its existing waiver, employees must “successfully perform the inspection, identifying preprogrammed defects as if the employee were performing hands-on training with a live instructor,” which includes “identify[ing] both key components and correctly flag[ging] all defects, including but not limited to closed cutout cocks, uncoupled air hoses, closed angle cocks, wrongly positioned retainer valves, and fouled brake rigging.”²

The Associations and their members support the proposed rule because, as has been demonstrated through several waivers, the use of virtual simulation training for this

² FRA-2020-0008-0007.

type of refresher training is in the public interest and consistent with railroad safety.³

Virtual simulations and computer-based training have a proven track record in the rail industry. Such training allows railroads to provide consistent, content-based training to individual railroad employees and to evaluate their knowledge on a variety of different railcars in a variety of situations that cannot be easily replicated in a physical environment. The training allows railroads to provide objective feedback and instant reinforcement to employees to help ensure that employees can accurately identify defects on various types of railcars and brake systems while performing required brake tests. Additionally, virtual simulation reinforces safe practices and procedures and permits the training to be conducted without exposing employees to walking hazards or other potential injury exposures that employees may otherwise experience in an active work setting. Indeed, as one railroad noted in its recent petition to extend its existing waiver, revocations and operational testing failures associated with Class 1 brake tests have fallen since the railroad implemented its simulation training program.⁴

Virtual simulation training is widely used across sectors and railroads have considerable experience successfully implementing virtual simulation training.

Computer-based or virtual simulation training is not new or novel at this point. Indeed, FRA recently noted that simulator training is a common tool used across many fields.⁵ Virtual simulation is used by the military, hospitals, civilian governments, and

³ See FRA-2011-0074, FRA-2018-0100, FRA-2020-0008, FRA-2020-0010, FRA-2020-0087, FRA-2021-0042, and FRA-2023-0031.

⁴ FRA-2020-0008-0007.

⁵ “*Web-based Simulator Training and Skill Transfer: Literature Review*,” Final Report, pg. 22, FRA, Office of Research, Development, and Technology, DOT/FRA/ORD-25-01 (April 9, 2025). https://railroads.dot.gov/sites/fra.dot.gov/files/2025-04/Literature%20Review%20-%20Web%20Simulator%20and%20Training_0.pdf.

various industries to train, test, and prepare employees for a broad array of job responsibilities.⁶ Moreover, virtual simulation training is accepted in a variety of contexts across all modes of transportation. Trucking, aviation, and marine transportation, all allow for the incorporation of computer-based or simulator-based training for their employees at some level, whether for initial or refresher training, or both. As an example, the Federal Aviation Administration (FAA) has embraced virtual training for a wide range of aviation professionals, including air traffic controllers, through the FAA Academy.⁷ Earlier this year, on May 13, 2025, FAA touted its plans to certify air traffic controllers faster while reducing costs by installing more tower simulation systems across the United States.⁸ FAA noted several safety benefits tied to the roll-out of more simulation training systems, including the ability to simulate complex configurations, develop scenarios to address safety trends, practice coordination, and rehearse phraseology, many of which apply with equal force to the railroad environment.

FRA also has a long history of allowing virtual simulations, albeit in a very specific context. FRA regulations have allowed railroads to use locomotive simulators to test knowledge, examine skills, and monitor locomotive engineer performance for purposes of engineer certification for nearly 35 years.⁹ However, FRA has been slow to adopt regulations that allow for virtual training in other areas, and the training requirements, specifically those in part 232, remain outdated. As a result, railroads have resorted to the

⁶ See e.g., <https://transportation.army.mil/MITD/maritimesimulation.html>.

⁷ https://www.faa.gov/training_testing/faa_academy.

⁸ <https://www.faa.gov/newsroom/faa-continues-rollout-tower-simulation-systems-improve-controller-training>.

⁹ “*Qualifications for Locomotive Engineers*,” Final Rule, 56 Fed. Reg. 28228 (June 19, 1991).

waiver process to incorporate modern virtual simulation training for air brake inspections.¹⁰

As noted in the preamble to the NPRM, FRA has been collecting data on this type of virtual simulation training program from other railroads going back to 2012, when it first approved BNSF's virtual simulation training program as an alternative to the "hands-on" requirement in § 232.203(b)(8).¹¹ Feedback on the use of these virtual simulation programs has been almost uniformly positive across the railroads. CSX noted in its petition to renew its waiver that—

Attendees of recertification classes have expressed their appreciation of creating a life-like train inspection and the ability to identify defects rarely seen in the hands-on environment. The attendees have reiterated their approval of exposing students to scenarios and conditions not easily [] replicated in the real world....To date, there have been zero employees who have elected to opt-out of the detailed air brake simulation.¹²

FRA also noted in a separate decision letter approving the virtual simulation program of BNSF that its observations and exit surveys demonstrated that there is "wide end-user satisfaction and approval with the software."¹³ CPKC recently noted in its petition to renew its waiver, "some T&E employees have commented that they are more comfortable asking questions during this training and that they are provided more variety in the situations they are trained on." Additionally, Norfolk Southern has noted that FRA sought feedback following electronic training, and the railroad also sought to verify the quality and

¹⁰ See FRA-2011-0074, FRA-2018-0100, FRA-2020-0010, FRA-2020-0087, FRA-2021-0042, and FRA-2023-0031.

¹¹ 90 Fed. Reg. at 28667.

¹² FRA-2020-0007-0008.

¹³ FRA-2011-0074-0015.

effectiveness of the training by soliciting additional feedback from employees. Those Norfolk Southern employees provided “consistently and overwhelmingly positive” comments.¹⁴ The widespread agreement amongst users is strong evidence of the effectiveness of the railroads’ virtual simulation training programs.

Virtual simulation training programs are consistent with railroad safety.

The last decade was the safest on record for railroads. Virtual simulation training is one of the tools driving accident and employee injury rates down. Class I railroad mainline accidents per million mainline train-miles have dropped 43% since 2005, and 11% since 2023.¹⁵ Brake equipment accidents make up a very small percentage of incidents on the railroad—in 2024, there were approximately 0.023 accidents per million train-miles—and have dropped by approximately 51% since 2005 as railroad operations have become safer.¹⁶ The rate of brake-caused accidents has dropped over the last ten years, and FRA data for 2024 shows that there were only 15 brake equipment accidents across the entire rail network resulting in the second lowest rate of brake-caused accidents per million train miles on record.¹⁷ Moreover, Class I railroads have reduced employee casualty rates by 46% since 2005, and 2024 was the all-time low. The largest area of employee injuries over the last five years has been slip and fall incidents. By taking this refresher training out of the live railroad operating environment, railroads are proactively limiting their employees’ risk exposure.

¹⁴ FRA-2018-0100-0012.

¹⁵ AAR Analysis of FRA Train Accident Database as of March 2025. Note: Includes accidents due to locomotive brake defects. Data for 2024 is preliminary.

¹⁶ *Ibid.*

¹⁷ *Ibid.*

In addition to the data, there are several intuitive reasons why virtual simulation programs are consistent with railroad safety. Training modules offer step-by-step learning tools that can be repeated as necessary in a low-stress environment. All users are evaluated on the same material (variety of railcars, variety of brake types, etc.) regardless of what live equipment is available. Experts carefully design the programs to provide clear, concise instructions that are correctly delivered. The programs also eliminate instructor errors or omissions and remove the hesitancy of students asking a question or asking for something to be repeated. The feedback provided to the employee is immediate and provided without subjective opinion. Indeed, FRA staff have independently recognized many of these benefits, noting that the virtual training environment allows employees to work with equipment that may not ordinarily be seen or staged with less risks and accomplish faster knowledge transfer.¹⁸ This assessment is supported by recent FRA research finding that “[s]imulator-based training offers numerous benefits for workforce development and safety mitigation, including enhanced learning and realistic scenario practice.”¹⁹ FRA’s recent research ultimately concluded that simulator training is highly important to various industries, including railroads, noting that “[t]hese training methods are effective for skill acquisition, offering flexibility and cost-effectiveness while also providing a tactile learning experience.”²⁰

¹⁸ Rob Castiglione, Staff Director, RAIL GROUP ON AIR podcast – Part 243 Virtual Training, with the Federal Railroad Administration and Heartwood, Rail Group on Air, available at <https://www.railwayage.com/news/cfr-49-part-243-virtual-training-with-the-federal-railroad-administration-and-heartwood-rail-group-on-air/>.

¹⁹ DOT/FRA/ORD-25-01, pg. 22.

²⁰ *Ibid.*

Virtual simulation training programs are more efficient than traditional “hands-on” training.

With computer-based training, users can observe real-life situations that are difficult to present in a classroom situation. A tour around a railyard probably will not deliver those rare and exceptional circumstances that may require training. However, computer-based training can illustrate many different scenarios in a single session, which the user can revisit, as needed, for review or remedial training. Simulating the same or similar scenarios with a single session using traditional “hands-on” methods is effectively impossible because railroads do not have the luxury of leaving a train at a single location just to accommodate training, as the railroads’ customers expect reliable service. Additionally, because virtual training provides instant reinforcement with less subjectivity, it results in a more efficient training experience. Lastly, computer-based training is efficient for the user because training can be scheduled at a time that fits the user’s needs and schedule.

The NPRM is consistent with the deregulatory agenda of the President and the Secretary of Transportation.

Executive Order (E.O.) 14192, “Unleashing Prosperity Through Deregulation” states that it is the policy of the President “to significantly reduce the private expenditures required to comply with Federal regulations.”²¹ Consistent with that policy, E.O. 14219, “Ensuring Lawful Governance and Implementing the President’s ‘Department of Government Efficiency’ Deregulatory Initiative,” directs agencies to rescind regulations

²¹ 90 Fed. Reg. 9065 (Jan. 31, 2025).

that “impose significant costs upon private parties that are not outweighed by public benefits,” “regulations that harm the national interest by significantly and unjustifiably impeding technological innovation,” and “regulations that impose undue burdens on small business and impede private enterprise and entrepreneurship.”²² On April 3, 2025, the Office of the Secretary published a Request for Information in the Federal Register seeking information to “achieve[] meaningful burden reduction while continuing to meet statutory obligations and ensure the safety of the U.S. transportation system” as part of its efforts to implement the President’s deregulatory agenda.²³

The proposed rule incorporates technological innovation and increases regulatory flexibility by allowing railroads to use an alternative method to accomplish the “hands-on” portion of the refresher training required by § 232.203(b)(8). Moreover, it eliminates the requirement to periodically petition FRA for waivers to operate virtual training systems that have proven successful. Currently, there are at least six railroads who have petitioned for relief from this requirement. These railroads would be relieved of the costs associated with submitting waiver petitions every five years. Similarly, FRA would be relieved of the administrative costs associated with assessing multiple successive petitions seeking the same relief.

²² 90 Fed. Reg. 10583 (Feb. 19, 2025).

²³ 90 Fed. Reg. 14593

For these reasons, the Associations support the NPRM and recommend that FRA issue a final rule incorporating the proposed changes to § 232.203(b)(8).

Respectfully submitted,



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