

Why GAO Did This Study

In May 2015, DOT issued a final rule requiring certain trains hauling flammable liquids to equip with ECP brakes. This rule has met opposition from many industry stakeholders. The Fixing America's Surface Transportation Act requires DOT to test ECP brakes and reevaluate the economic analysis supporting the ECP brake requirement and includes a provision for GAO to review the potential costs and benefits of ECP. This report examines views on costs railroads may realize in meeting the ECP brake rule, the potential business benefits, and how DOT and the railroad industry estimated safety benefits.

GAO reviewed rulemaking documents; interviewed 13 rail experts selected based on published work and suggestions from the National Academies of Sciences; interviewed DOT officials and representatives of the seven largest railroads in North America; interviewed industry stakeholders, including the Association of American Railroads and compared DOT's estimates and modeling efforts against federal criteria and GAO standards for internal control.

What GAO Recommends

GAO recommends that DOT acknowledge uncertainty in its revised economic analysis of ECP brakes, collect data from railroads on their use of ECP brakes, and publish additional information about ECP brake modeling. DOT disagreed with the recommendations, stating that GAO did not provide sufficient evidence. GAO believes it had sufficient evidence and stands by the recommendations, as discussed in this report.

View [GAO-17-122](#). For more information, contact Susan Fleming at (202) 512-2834 or flemings@gao.gov.

TRAIN BRAKING

DOT's Rulemaking on Electronically Controlled Pneumatic Brakes Could Benefit from Additional Data and Transparency

What GAO Found

DOT based estimates of the business benefits of electronically controlled pneumatic (ECP) brakes on limited data, in part, because railroads that have used ECP brakes to date have shared limited data on their use. ECP brakes provide an electronic brake signal instantaneously throughout the train, allowing train cars to brake faster than with conventional air brakes. In supporting the May 2015 rule requiring the use of ECP brakes on certain trains hauling flammable liquid, the Department of Transportation (DOT) estimated the potential business benefits of ECP brakes, including reduced fuel consumption, reduced wear on wheels, and improved operational efficiencies. Industry stakeholders claim that DOT overestimated benefits. Seven of 10 experts GAO interviewed who commented on such benefit estimates said that DOT's estimates of business benefits, such as reduced fuel consumption, were based on experiences that may not be representative. DOT also estimated benefits to railroads from improved operational efficiency (e.g., the ability to return to speed sooner after braking), while industry stakeholders stated that poor reliability of ECP brakes will greatly limit any such benefits; however, only two out of five railroads provided GAO extensive quantifiable data to support these claims. DOT's use of limited data adds uncertainty to the estimates that DOT did not always acknowledge in the rule and its supporting analysis. By acknowledging uncertainties and in the future requiring railroads to collect and provide DOT more data on ECP brake use, DOT could improve its estimates and public confidence in those estimates, and use the data to determine the extent to which the ECP brake rule is meeting its objectives.

DOT and an industry association each conducted computer-based modeling and additional analysis to estimate the potential safety benefits of ECP brakes, but took different approaches based in part on different assumptions of how the brakes affect what happens in a derailment. DOT's analysis supporting its final rule found that the improved braking performance of ECP brakes can reduce the number of cars in a derailment that puncture and release their contents by almost 20 percent compared to other braking technologies. DOT published two reports and explanatory details in the final rule to document this approach. The industry association's analysis and modeling, using a different approach and assumptions, found ECP brakes provide a "marginal" safety benefit. GAO found DOT's modeling lacked transparency as the information published may not be sufficient to enable an independent third party to replicate it. For example, DOT did not report complete details on specific inputs, such as how the model applied the brake force to tank cars. One researcher attempted to replicate the analysis and told GAO he was unable to do so, citing limited information. Best practices identified by the Office of Management and Budget state that modeling results published by federal agencies should be supported by transparent data to facilitate third-party review. By providing more information about the modeling, DOT could help stakeholders and the public better understand the analysis and the extent to which the model's results hinged on DOT's choices and assumptions. This increased understanding could in turn increase confidence in the ECP brake requirement.