



DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety Administration

[Docket No. FMCSA-2024-0255]

Agency Information Collection Activities; Approval of a New Information

Collection Request: Study of Warning Devices for Stopped Commercial Motor Vehicles

AGENCY: Federal Motor Carrier Safety Administration (FMCSA), Department of Transportation (DOT).

ACTION: Notice and request for comments.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, FMCSA announces its plan to submit the Information Collection Request (ICR) described below to the Office of Management and Budget (OMB) for review and approval. This notice invites comments on a proposed information collection titled “Study of Warning Devices for Stopped Commercial Motor Vehicles.” It is an experimental study that requires data collection for evaluating whether warning devices meaningfully influence crash-relevant aspects of human performance in the presence of a parked or disabled commercial motor vehicle (PDCMV), and if so, how and to what extent. These data collection efforts are expected to require the participation of 256 drivers. A total of 9 comments were provided in response to the 60-day *Federal Register* notice (91 FR 1591). The total burden hours reported in the 60-day FR published on January 8, 2025, has now been decreased by 128 hours after FMCSA inadvertently included but has now removed the 128 hours from the burden estimate. The 128 hours is the time estimated for respondents to travel to and from the location where the collection of information will occur.

DATES: Comments on this notice must be received on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

ADDRESSES: Written comments and recommendations for the proposed information collection should be submitted within 30 days of publication of this notice to www.reginfo.gov/public/do/PRAMain. Find this information collection by selecting “Currently under 30-day Review - Open for Public Comments” or by using the search function.

FOR FURTHER INFORMATION CONTACT: Samuel White, Research Division, DOT, FMCSA, 1200 New Jersey Avenue SE, Washington, DC 20590; 202-366-3068; Samuel.White@dot.gov.

SUPPLEMENTARY INFORMATION:

Title: Study of Warning Devices for Stopped Commercial Motor Vehicles

OMB Control Number: 2126-00XX.

Type of Request: New ICR

Respondents: Drivers

Estimated Number of Respondents: 256

Estimated Time per Response: 2.0 to 2.5 Hours

Expiration Date: This is a new ICR.

Frequency of Response: Once.

Estimated Total Annual Burden: 504.92 hours

BACKGROUND:

PDCMV¹s on the road negatively impact traffic operations and safety.¹ To increase the conspicuity of PDCMV²s and mitigate crash risk, FMCSA requires specific warning devices to be carried² on all commercial motor vehicles (CMVs) and, except in the case

¹ Roberts, G. L., & Lynn, C. (2003). Passenger vehicle crashes into stationary large trucks: incidence and possible countermeasures (No. VTRC 03-CR17). Virginia Transportation Research Council.

² 49 CFR 393.95. (2024). Emergency equipment on all power units. <https://www.ecfr.gov/current/title-49/section-393.95>

of necessary traffic stops, be deployed³ near the vehicle whenever it is stopped on the road or shoulder. The Federal Motor Carrier Safety Regulations prescribe specific rules⁴ concerning how and where the warning devices must be placed, based on road and traffic attributes (e.g., whether the road is straight or curved, whether the vehicle is stopped in a business or residential district, whether the road is divided or undivided, etc.) as well as the presence of conditions affecting visibility (e.g., time of day, physical obstructions, etc.). These requirements follow from the basic notion that increasing the conspicuity of a PDCMV makes it easier to see and recognize, thereby reducing the risk of a crash involving passing motorists.

In addition, the National Highway Traffic Safety Administration (NHTSA) prescribes performance and design specifications⁵ for warning devices under 49 CFR 571.125 of the Federal Motor Vehicle Safety Standards (FMVSS). For instance, this standard establishes minimum specifications for factors affecting the conspicuity (including reflectivity, color, luminance) of warning triangles, the most commonly utilized type of warning device (due to their reusability, shelf life, and fire-risk safety concerns compared to flares or fuses). The purpose of this standard is “to assure that the warning devices can be readily observed during daytime and nighttime lighting conditions, have a standardized shape for quick message recognition, and perform properly when deployed.”⁶

Public interest in warning device requirements for PDCMVs has increased in recent years for several reasons. For example, advances in automated driving system (ADS) technology have raised critical questions regarding potential barriers to regulatory

³ 49 CFR 392.22. (2024). Emergency signals; stopped commercial motor vehicles. <https://www.ecfr.gov/current/title-49/section-392.22>

⁴ Placement of warning devices – Special rules. 49 CFR 392.22(b)(2) (1998). [https://www.ecfr.gov/current/title-49/part-392#p-392.22\(b\)\(2\)](https://www.ecfr.gov/current/title-49/part-392#p-392.22(b)(2))

⁵ FMVSS no. 125; Warning devices. 49 CFR 571.125 (2012). <https://www.ecfr.gov/current/title-49/subtitle-B/chapter-V/part-571/subpart-B/section-571.125>

⁶ FMVSS; Warning devices, 58 FR 27514 (May 10, 1993). https://archives.federalregister.gov/issue_slice/1993/5/10/27507-27517.pdf#page=8

compliance with warning device safety standards⁷ and regulations⁸ which reference or require a “driver.” In addition, alternative types of warning devices developed by industry, including those intended to increase driver safety during device deployment, have resulted in multiple applications for exemption from the corresponding safety regulations.^{9,10} These recent issues related to warning device requirements also call attention to the historically unresolved questions of whether the use of such devices improves traffic safety and, if so, how and to what extent.

Past attempts by the Federal Highway Administration (FHWA)^{11,12} and other researchers¹³ to answer those questions yielded generally inconclusive or inconsistent results, which possibly influenced NHTSA’s past decision not to pursue conducting its own research on the topic.¹⁴ FMCSA (previously under FHWA) itself has never conducted experimental research on the impact of using warning devices. As the only regulatory authority which still requires CMV operators to use warning devices, the responsibility to answer these questions finally and definitively is best charged to FMCSA.

⁷ Kim, A., Perlman, D., Bogard, D., & Harrington, R. (2016). Review of federal motor vehicle safety standards (FMVSS) for automated vehicles. John A. Volpe National Transportation Systems Center, for NHTSA and USDOT Intelligent Transportation Systems Joint Program Office. <https://rosap.ntl.bts.gov/view/dot/12260>

⁸ Perlman, D., Bogard, D., Epstein, A., Santalucia, A., & Kim, A. (2018). Review of the federal motor carrier safety regulations for automated commercial vehicles: Preliminary assessment of interpretation and enforcement challenges, questions, and gaps (FMCSA-RRT-17-013). John A. Volpe National Transportation Systems Center. <https://rosap.ntl.bts.gov/view/dot/35426>

⁹ Parts and accessories necessary for safe operation; Pi Variables, Inc; Application for an exemption, 88 FR 40920 (June 22, 2023). <https://www.govinfo.gov/content/pkg/FR-2023-06-22/pdf/2023-13205.pdf>

¹⁰ Parts and accessories necessary for safe operation; Exemption application from Waymo LLC, and Aurora Operations, Inc., 88 FR 13489 (Mar. 3, 2023). <https://www.govinfo.gov/content/pkg/FR-2023-03-03/pdf/2023-04385.pdf>

¹¹ Lyles, R. W. (1980). Effective warning devices for parked/disabled vehicles (No. FHWA-RD-80-65 Final Rpt.). University of Maine, Orono, for Federal Highway Administration.

¹² Knoblauch, R. L., & Tobey, H. N. (1980). Safety aspects of using vehicle hazard warning lights, Volume 2 (No. FHWA/RD-80-102). Biotechnology, Inc., for Federal Highway Administration.

¹³ Allen, M. J., Miller, S. D., & Short, J. L. (1973). The effect of flares and triangular distress signals on highway traffic. *Optometry and Vision Science*, 50(4), 305-315.

¹⁴ Federal motor vehicle safety standards; Warning devices, 59 FR 49586 (September 29, 1994). https://archives.federalregister.gov/issue_slice/1994/9/29/49585-49591.pdf#page=2

Given the increasing focus on ADS, questions surrounding the safety of CMV drivers when deploying warning devices, and the availability of new technology and alternative devices since these questions were last explored in the 1980s, there is a need to thoroughly evaluate the effectiveness of warning devices under current regulations. In addition, advanced research instruments unavailable or not in use at the time of all past research on this topic are now in common use and would permit far more sophisticated analyses of the effects of warning devices on driver behavior. This includes sensors which can precisely measure and record the location of vehicles (e.g., differential Global Positioning System), eye-tracking devices which allow the researcher to determine the precise moment when a driver first glanced at a PDCMV, and instrumented vehicles which record accurate, high-frequency data related to drivers' interactions with a vehicle's controls.

FMCSA plans to implement these modern tools in a controlled experiment at a closed-course, state-of-the-art driving research facility that will allow the most comprehensive examination of the effects of warning devices to date. The results of the study may support future rulemaking related to warning devices and provide baseline data necessary to inform Agency decisions on exemption applications for alternative warning device products.

FMCSA published the 60-day *Federal Register* notice on January 8, 2025, and the comment period closed on March 10, 2025 (90 FR 1591). A total of nine comments were received from the public. These comments revolved around nine themes: regulatory considerations and impact, environment or condition-based study factors, study factors for other devices, automated vehicle considerations, safety benefits of and effectiveness of warning devices, and risks or challenges with warning devices. These are all important comments for FMCSA to consider while conducting the study or when making decisions based on the results of the study. However, none of the comments directly address the

proposed information collection or its associated costs/impacts. As such, FMCSA summarizes the comments but provides no response. Many comments touched on multiple issues; however, the comments below are organized based on the primary feedback provided.

REGULATORY CONSIDERATIONS AND IMPACT

There is widespread recognition that regulatory gaps and complexities hinder effective deployment and use of warning devices. Commenters noted that current rules do not adequately address the overuse of warning lights, and that knowledge gaps continue to weaken the regulatory framework's effectiveness. Additionally, legal loopholes and the complexity of implementing regulations were seen as barriers to the adoption of improved safety measures. Nonetheless, many comments supported FMCSA's ongoing regulatory efforts and encouraged further research to improve and modernize safety rules.

ENVIRONMENT OR CONDITION-BASED STUDY FACTORS

Environmental factors were a consistent theme, with many comments highlighting how visibility issues—compounded by driver inattention, curves in the road, and lack of rumble strips—reduce the effectiveness of warning devices. Visibility varies significantly across road types, making it essential for studies to account for these conditions. Several comments advocated for studies to explicitly consider how different environmental scenarios impact both warning device performance and driver response.

STUDY FACTORS FOR OTHER DEVICES

The public expressed concerns about the reliability and effectiveness of alternative warning devices. Some noted that excessive or competing lights, such as flashing beacons, can confuse drivers and reduce recognition of genuine hazards. Others raised the issue of power failure risks in beacons and the failure of some warning devices in real-world conditions. There was strong support for the evaluation of new warning

technologies and a call to remain open to innovative solutions that might enhance safety outcomes.

AUTOMATED VEHICLE CONSIDERATIONS

With deployment nearing of driver-out ADS-equipped CMVs, commenters raised important questions about how these technologies interface with existing safety requirements. Many pointed out that automated vehicles (AVs) lack the ability to deploy warning devices which introduces new regulatory challenges. Concerns included the need for AVs to have redundant safety systems and the potential mismatch between other driver expectations and AV capabilities. The comments emphasized the need for additional human-factors research, particularly regarding how drivers maintain attention and readiness to assume control of ADS-equipped CMVs. There was also a call for developing specific safety solutions for ADS-equipped CMVs and addressing gaps in AV breakdown procedures.

SAFETY BENEFITS OF AND EFFECTIVENESS OF WARNING DEVICES

Despite some concerns, many commenters acknowledged the critical role of warning devices in preventing accidents. Proper use of these devices was praised for offering early hazard detection and for being simple yet effective. The comments reinforced the idea that even basic tools can provide significant safety benefits when deployed correctly. Public feedback also urged FMCSA to validate the effectiveness of these tools through research and ensure that any new safety technologies meet or exceed this benchmark.

RISKS OR CHALLENGES WITH WARNING DEVICES

The misuse or overuse of warning devices was a key concern, as it can reduce their clarity and effectiveness in signaling real hazards. Inattentive drivers, outdated devices, and the risk of device placement on the roadside were all cited as challenges. Some commenters also mentioned that certain warning devices may be dangerous,

especially when their deployment puts drivers at risk. These concerns underscore the need for updated regulations and evaluations that reflect current and emerging road conditions and technologies.

PUBLIC COMMENTS INVITED: You are asked to comment on any aspect of this information collection, including: (1) whether the proposed collection is necessary for the performance of FMCSA's functions; (2) the accuracy of the estimated burden; (3) ways for FMCSA to enhance the quality, usefulness, and clarity of the collected information; and (4) ways that the burden could be minimized without reducing the quality of the collected information.

Issued under the authority of 49 CFR 1.87.

Jonathan Mueller,
Acting Associate Administrator
Office of Research and Registration.

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