



FMCSA EXEMPTION – DRIVING WITH MIRROREYE® CMS

DEPARTMENT OF TRANSPORTATION [4910-EX-PJ]

Federal Motor Carrier Safety Administration

[Docket No. FMCSA-2018-0141]

Parts and Accessories Necessary for Safe Operation; Application for an Exemption from Stoneridge, Inc.

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

ACTION: Notice official disposition.

SUMMARY: The Federal Motor Carrier Safety Administration (FMCSA) announces its decision to grant Stoneridge, Inc.'s (Stoneridge) application for a limited 5-year exemption to allow motor carriers to operate commercial motor vehicles (CMV) with the company's MirrorEye™ Camera Monitor System (CMS) installed as an alternative to the two rear-vision mirrors required by the Federal Motor Carrier Safety Regulations (FMCSR). The Agency has determined that granting the exemption to allow use of the MirrorEye™ system in lieu of mirrors would likely achieve a level of safety equivalent to or greater than the level of safety provided by the regulation.

DATES: This exemption is effective February 21, 2019, and ending February 13, 2024.

FOR FURTHER INFORMATION CONTACT: Mr. Luke Loy, Vehicle and Roadside Operations Division, Office of Carrier, Driver, and Vehicle Safety, MC-PSV, (202)-366-0676

Federal Motor Carrier Safety Administration

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DOCKET: For access to the docket to read background documents or comments submitted to notice requesting public comments on the exemption application, go to www.regulations.gov at any time or visit Room W12-140 on the ground level of the West Building, 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., ET, Monday through Friday, except Federal holidays. The on-line Federal document management system is available 24 hours each day, 365 days each year. The docket number is listed at the beginning of this notice.

SUPPLEMENTARY INFORMATION: Background FMCSA has authority under 49 U.S.C. 3 1136(e) and 31315 to grant exemptions from certain parts of the FMCSRs. FMCSA must publish a notice of each exemption request in the Federal Register (49 CFR 381.3 15(a)). The Agency must provide the public an opportunity to inspect the information relevant to the application, including any safety analyses that have been conducted. The Agency must also provide an opportunity for public comment on the request. The Agency reviews safety analyses and public comments submitted, and determines whether granting the exemption would likely achieve a level of safety equivalent to, or greater than, the level that would be achieved by the current regulation (49 CFR 381.305). The decision of the Agency must be published in the Federal Register (49 CFR 381.315(b)) with the reasons for denying or granting the application and, if granted, the name of the person or class of persons receiving the exemption, and 5 the regulatory provision from which the exemption is granted. The notice must also specify the effective period and explain the terms and conditions of the exemption. The exemption may be renewed (49 CFR 38 1.300(b)).

APPLICATION FOR EXEMPTION: Stoneridge applied for an exemption from 49 CFR 3 93.80(a) to allow its MirrorEye™ CMS to be installed as an alternative to the two rear-vision mirrors required on CMVs. A copy of the application is included in the docket referenced at the beginning of this notice. Section 393.80(a) of the FMCSRs requires that each bus, truck, and truck-tractor be equipped with two rear-vision mirrors, one at each side. The mirrors must be positioned to reflect to the driver a view of the highway to the rear, and the area along both sides of the CMV. Section 393.80(a) cross-references the National Highway Traffic Safety Administration's (NHTSA) standard for mirrors on motor vehicles, Federal Motor Vehicle Safety Standard (FMVSS) No. 111. Paragraph S7.1 of FMVSS No. 111 provides requirements for mirrors on multipurpose passenger vehicles and trucks with a gross vehicle weight rating (GVWR) greater than 4,536 kg and less than 11,340 kg and each bus, other than a school bus, with a GVWR of more than 4,536 kg. Paragraph S8.1 provides requirements for mirrors on multipurpose passenger vehicles and trucks with a GVWR of 11,340 kg or more. The MirrorEye™ CMS consists of multiple digital cameras mounted on the exterior of the CMV and enclosed in an aerodynamic package that provides both environmental protection for the cameras and a mounting location for optimal visibility. Each camera has video processing software that presents a clear, high-definition image to the driver by means of a monitor mounted to each A-pillar of the CMV, i.e., the structural member between the windshield and door of the cab. The company explains that attaching the monitors to the A-pillars avoids the creation of incremental blind spots while eliminating the blind spots associated with conventional mirrors. Stoneridge states that its CMS meets or exceeds the visibility requirements provided in FMVSS No. 111 based on several factors:

- Greater field of view (FOV) than conventional mirrors -Mirrors are replaced by wide angle, narrow angle and look-down cameras expanding the FOV by an estimated 25 percent.
- Fail-safe design -The CMS has independent video processing of multiple camera images so that in the unlikely event of an individual camera failure, the other camera images continue to be displayed. This ensures that real-time images are continuously displayed without interruption.
- Augmented and enhanced vision quality -The use of high-definition digital cameras provides for color night vision, low light sensitivity and trailer panning capabilities. This assists with night driving, operating under other low lighting conditions, and provides for glare reduction.
- Trailer panning -The CMS automatically tracks the end of the trailer to keep it in view while the vehicle is moving forward. Stoneridge believes this feature could eliminate collisions associated with the CMV driver making a right-hand turn, and incidents where the CMV strikes a pedestrian or bicyclist while making right hand turns.

Stoneridge also believes use of its CMS may help to reduce driver fatigue by requiring less head movement by drivers compared to the number of head movement needed to use conventional mirrors. The company claims that use of its CMS provides improved fuel economy because the housing for the system is more aerodynamic than the conventional mirrors required by § 393.80(a). The exemption would apply to all CMV operators driving vehicles with the MirrorEye™ CMS. Stoneridge believes that mounting the system as described would maintain a level of safety that is equivalent to, or greater than, the level of safety achieved without the exemption.

Comments FMCSA published a notice other application in the Federal Register on April 5, 2018, and asked for public comment (83 FR 14716). The Agency received 31 comments from: the American Trucking Associations (ATA); two motor carriers (Schneider National, Inc. (Schneider) and J.B. Hunt Transport Services, Inc. (J.B. Hunt)); the Trucking Alliance; the Commercial Vehicle Safety Alliance (CVSA); Advocates for Highway and Auto Safety (Advocates); and 25 individuals. ATA supports granting the application to allow use of the CMS as an alternative to the two rear-view mirrors required by the FMCSRs. ATA stated, "Granting this and similar petitions for exemption from FMCSR 393.80 requirements that currently are barriers to mirrorless technology will provide valuable real-world experience and data to inform future regulatory action to allow CMS technology as an alternative to rear view mirrors for all vehicle types."



Further, ATA stated: "Motor carriers and truck manufacturers recognize the potential of CMS for improving both safe operations and fuel efficiency when compared with traditional exterior mirrors. For example, CMS can provide the following functions beyond what traditional minors offer: Trailer swing video panning view capabilities; wider viewing angles of driver blind spots encompassing multiple minor locations (i.e., hood spot minors) to one vantage point; direct solar glare resistance, and night vision capabilities. It should also be noted that CMS can be designed and placed in a way that reduces the chances of damage compared with traditional minors, which can improve vehicle uptime and reduce maintenance and operational costs by eliminating traditional mirror repair/replacement and allowing faster driver pre/post trip inspections and technician officer inspections.

Schneider and J.B. Hunt stated that they have been using the MirrorEye™ CMS, in addition to the required minors, in a select number of vehicles, and both motor carriers support granting Stoneridge's application. Schneider states that its drivers using the MirrorEye™ CMS have (1) "had an overwhelmingly positive experience," and (2) confirmed some of the benefits touted by Stoneridge in its application, including improved visibility in night driving and low light conditions, improved visibility due to auto tracking of the trailer, and reduced driver distraction due to light and glare reduction. J.B. Hunt states that "we have not been involved in any collisions and have received overwhelming positive feedback from our test drivers." J. B. Hunt also states that its drivers noted benefits such as "real time, excellent monitor image clarity with improved field of vision around their tractor and trailing units and elimination of the tractor's problematic front passenger side blind spot." The Trucking Alliance, a coalition of freight and logistics companies that are working together to increase safety for commercial truck drivers, reduce the number of large truck accidents, and improve highway safety for the general public throughout the United States, also supports granting the Stoneridge application. The Trucking Alliance notes that some of its member carriers have been testing the technologies offered by 9 Stoneridge that are the subject of the exemption application.

The Trucking Alliance states: Carriers report that this Stoneridge technology is performing at better than acceptable levels of performance. Carriers have reported no collisions. Drivers report that the technology works and benefits them in eliminating many of the problems associated with conventional side mirrors. For example, one Trucking Alliance member carrier has reported driver feedback includes such observations as a 'greater field of vision, color night vision images, and the trailer panning feature which tracks the end of the trailer during turning and backing maneuvers.'

Thirteen individuals commented in support of granting the temporary exemption, and noted various advantages of the Stoneridge CMS as compared to the rear vision mirrors required by the FMCSRs including (1) economic benefits related to fuel economy gains and carbon emission reductions from reduced drag forces, (2) superior total field-of-view around a CMV, including reduction/elimination of blind spots (3) increased visibility when driving at night and during inclement weather, (4) enhanced vehicle maneuverability in backing, turning, and lane changes through use of trailer scanning, (5) and reduced driver fatigue.

CVSA stated that while it recognizes there may be potential safety benefits of the proposed technology, it does not have data to support or refute the efficacy of CMS technology. However, CVSA noted that its associate member companies that have some experience with the Stoneridge technology reported that "drivers responded favorably when testing the MirrorEye™ technology and preferred them in place of traditional side mirrors." Additionally, CVSA noted that granting the exemption may have impacts on roadside enforcement personnel, as inspectors use the mirrors for purposes beyond the intent of the FMVSS and the FMCSRs. Specifically, CVSA states that roadside inspectors use the mirrors to see what is happening inside the cab, and to identify when 10 CMV drivers are operating a vehicle in an unsafe manner, such as illegally using a handheld electronic device, or not wearing a safety belt. Additionally, roadside inspectors frequently use mirrors to visually communicate with drivers during roadside inspections, when at the side or rear of the inspection vehicle. CVSA stated that it is unclear whether the technology has a proven safety benefit, and noted concern that exemptions from safety regulations have the potential to undermine consistency and uniformity in compliance enforcement, and encouraged FMCSA to consider the roadside enforcement and inspection aspects of rear vision mirror usage in the evaluation of the application.

Advocates opposes the Stoneridge application "on the basis that the application is overly broad. The regulations governing requests for exemption requires applications to include 'an estimate of the number of drivers and commercial motor vehicles (CMVs) that would be operated under the terms and conditions of the exemption', which in this case could encompass every CMV and driver presently on the U.S. roads.. we must oppose such an overly broad exemption which would apply for at least five years."

While Advocates opposes the application, it recognized the potential benefits of the technology, and instead urged NHTSA and FMCSA "to establish a pilot program study the benefits of using cameras to enhance commercial vehicle driver visibility as this technology has the potential to reduce or eliminate the large and dangerous blind zones around CMVs." Advocates states that the rear-vision mirror regulations are, by definition, minimum safety standards, and any exemption granted by FMCSA "could deny both the driver(s) and the public the minimum required safety protections intended under the FMCSRs and, in this case, the pertinent FMVSS as well."



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Twelve individuals commented opposing the application. Many of these commenters cited concerns regarding the ability of the CMS system to function properly in the event of a system failure (i.e., an electronic malfunction). These commenters also noted concerns about road debris creating partial or complete obstruction of the camera, sunlight and glare on monitor screens causing them to be not visible, and the possibility of increased driver distraction. Some commenters recommended that the CMS system could be used as a secondary, backup system, but that the rear-vision mirrors required by the FMCSRs should be retained in addition to the camera system.

FMCSA DECISION: The FMCSA has evaluated the Stoneridge exemption application, and the comments received. For the reasons discussed below, FMCSA believes that granting the exemption to allow motor carriers to operate CMVs with the Stoneridge MirrorEye™ CMS installed as an alternative to the two rear-vision mirrors required by the FMCSRs is likely to achieve a level of safety equivalent to or greater than the level of safety provided by the regulation. Use of the MirrorEye™ CMS provides CMV drivers with an enhanced field of view when compared to the required rear-vision mirrors because (1) it eliminates the blind spots on both sides of the vehicle created by the required rear-vision mirrors, (2) the multi-camera system expands the field of view compared to the required rear-vision mirrors by an estimated 25 percent, and (3) the trailer panning feature automatically tracks the end of the trailer to keep it in view in forward motion. Additionally, the MirrorEye™ CMS uses high-definition cameras and monitors that include features such as color night vision, low light sensitivity, and light and glare reduction that together help 12 provide drivers with improved vision in the field of view when compared to traditional rear-vision mirrors. The MirrorEye™ CMS includes features such as self-cleaning lenses/cameras to eliminate problems with rain and dirt, a feature that is not required for traditional rear-vision mirrors, and an advanced defrosting system for winter driving. In response to commenters' concerns about the possibility of electronic malfunctions that may compromise operation of the system, Stoneridge notes in its application:

The MirrorEye™ CMS is a fail-safe operating system by design due to its independent video processing of multiple camera images. In the unlikely event of an individual camera failure, the other camera images continue to be displayed. Proprietary software ensures that real-time images are continuously displayed without interruption. In addition to the MirrorEye™ CMS multi-camera redundant design, mounting the camera housing high on the vehicle and providing both a power-fold and breakaway feature further reduces the potential damage that is possible in normal operating environments. Importantly, neither of the motor carriers that provided comments and that are currently using the MirrorEye™ CMS cited any concerns or problems with system functionality.

In response to concerns about the possibility of increased driver distraction, FMCSA notes that the monitors will be located over the A-pillars to maintain the same approximate direction of glance as conventional mirrors, minimizing any possible concerns about increased distraction. And, as Stoneridge notes in its application, the monitor's mounting location "requires less lateral head movement resulting in an ergonomic benefit and less driver fatigue."

FMCSA acknowledges Advocates' concerns about the possible breadth of the exemption if granted. However, part 381 of the FMCSRs does not impose any specific limitations on the number of vehicles that may be covered by a temporary exemption; rather, it requires FMCSA to make a determination that any exemption that is granted is likely to maintain a level of safety that is equivalent to or greater than the level of safety that would be obtained by complying with the regulation. FMCSA believes that the Stoneridge MirrorEye™ CMS meets this burden. FMCSA also acknowledges CVSA's concerns regarding the inability of roadside inspectors and law enforcement officers to use rear-vision mirrors for the other uses described in its comments if the exemption is granted to permit use of the MirrorEye™ CMS in lieu of the mirrors. However, use of the rear-vision mirrors for purposes other than driver visibility is beyond the scope of the FMCSR requirements. FMCSA notes that inspectors may still communicate with drivers by means of hand signals/gestures if the system is on, and the driver will continue to see everything that would have been in view with the mirrors.

The FMCSRs impose several operational controls that will help ensure that the MirrorEye™ CMS is functioning properly at all times. Section 396.7 of the FMCSRs, "Unsafe operations forbidden," prohibits any vehicle from being operated in such a condition as to likely cause an accident or breakdown of the vehicle. Section 392.7(a) requires each CMV driver to satisfy himself/herself that a vehicle is in safe condition before operating the vehicle, which would include ensuring that the rear-vision mirrors (or in this case, the MirrorEye™ CMS) -are in good working order. Similarly, section 396.13(a) of the FMCSRs requires that, before driving a vehicle, a driver must be satisfied that the vehicle is in safe operating condition. If the MirrorEye™ CMS (effectively functioning as the rear vision mirrors) fails during operation, the driver must complete a driver vehicle inspection report at the completion of the workday as required 14 by section 396.11 of the FMCSRs, and the motor carrier must ensure that the defect is corrected.



TERMS AND CONDITIONS FOR THE EXEMPTION: The Agency hereby grants the exemption for a 5 -year period, beginning February 21, 2019, and ending February 13, 2024. During the temporary exemption period, motor carriers operating CMVs may utilize the Stoneridge MirrorEye™ CMS installed in lieu of the two rear-vision mirrors required by section 393.80 of the FMCSRs. FMCSA emphasizes that this exemption is limited to the Stoneridge MirrorEye™ CMS, and does not apply to any other camera-based mirror replacement system/technology. Section 396.7 of the FMCSRs, "Unsafe operations forbidden," prohibits any vehicle from being operated in such a condition as to likely cause an accident or a breakdown of the vehicle. If the camera or monitor system fails during normal vehicle operation on the highway, continued operation of the vehicle shall be forbidden until (1) the MirrorEye™ CMS can be repaired, or (2) conventional rear-vision mirrors that are compliant with section 393.80 are installed on the vehicle. The exemption will be valid for 5 years unless rescinded earlier by FMCSA. The exemption will be rescinded if: (1) motor carriers and/or CMVs fail to comply with the terms and conditions of the exemption; (2) the exemption has resulted in a lower level of safety than was maintained before it was granted; or (3) continuation of the exemption would not be consistent with the goals and objectives of 49 U.S.C. 31136(e) and 31315(b). 15 Interested parties possessing information that would demonstrate that motor carriers operating commercial motor vehicles utilizing the Stoneridge MirrorEye™ CMS installed as an alternative to the two rear-vision mirrors required by section 393.80 of the FMCSRs are not achieving the requisite statutory level of safety should immediately notify FMCSA. The Agency will evaluate any such information and, if safety is being compromised or if the continuation of the exemption is not consistent with 49 U.S.C. 31136(e) and 31315(b), will take immediate steps to revoke the exemption.

PREEMPTION: In accordance with 49 U.S.C. 313 13(d), as implemented by 49 CFR 38 1.600, during the period this exemption is in effect, no State shall enforce any law or regulation applicable to interstate commerce that conflicts with or is inconsistent with this exemption with respect to a firm or person operating under the exemption. States may, but are not required to, adopt the same exemption with respect to operations in intrastate commerce.

Raymond P. Martinez
Administrator