



**DEPARTMENT OF TRANSPORTATION**

**[4910-EX-P]**

**Federal Motor Carrier Safety Administration**

**[Docket No. FMCSA-2019-0159]**

**Parts and Accessories Necessary for Safe Operation; Vision Systems North America, Inc. Application for an Exemption**

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

**ACTION:** Notice of final disposition.

**SUMMARY:** The Federal Motor Carrier Safety Administration (FMCSA) announces its decision to grant Vision Systems North America, Inc.'s (VSNA) application for a limited 5-year exemption to allow motor carriers to operate commercial motor vehicles (CMVs) with the company's Smart-Vision high definition camera monitoring system (Smart-Vision) installed as an alternative to the two rear-vision mirrors required by the Federal Motor Carrier Safety Regulations (FMCSRs). The Agency has determined that granting the exemption to allow use of the Smart-Vision 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 [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER] and ending [INSERT DATE FIVE YEARS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**FOR FURTHER INFORMATION CONTACT:** Mr. Jose Cestero, Vehicle and Roadside Operations Division, Office of Carrier, Driver, and Vehicle Safety, MC-PSV, Federal Motor Carrier Safety Administration, 1200 New Jersey Avenue, SE, Washington, DC 20590-0001; (202) 366-5541; [jose.cestero@dot.gov](mailto:jose.cestero@dot.gov).

*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](http://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. 31136(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 381.315(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 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 381.300(b)).

## **VSNA Application for Exemption**

VSNA applied for an exemption from 49 CFR 393.80(a) to allow its Smart-Vision system 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 NHTSA's standards for mirrors on motor vehicles (49 CFR 571.111, 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 Smart-Vision system consists of multiple digital cameras firmly mounted high on the exterior of the vehicle, enclosed in an aerodynamic package that provides both environmental protection for the cameras and a mounting location for optimal visibility. Each camera has proprietary video processing software that presents a clear, high-definition image to the driver by means of a monitor firmly mounted to each A-pillar of the CMV, i.e., the structural member between the windshield and door of the cab. VSNA 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. VSNA states that its Smart-Vision

system meets or exceeds the visibility requirements provided in FMVSS No. 111 based on the following factors:

- *Increased field of view (FOV) when compared to conventional mirrors* – The Smart-Vision system enables the driver to see (1) vehicles and pedestrians in the “No-Zone,” (2) multiple lanes of traffic and overtaking vehicles that are entering the commercial vehicle “No-Zone,” (3) tire fires, and (4) loose straps, ropes, or chains when transporting open cargo.
- *Increased Image Quality* – The Smart-Vision system provides enhanced vision in inclement weather, higher visibility in low light conditions, and filters out dawn and dusk sunlight glare, improving driver visibility.
- *Fail-safe design* – The Smart-Vision system elements have a fail-safe design due to the independent video processing of multiple camera images, additionally supported by software diagnostics to ensure that “real time images” are displayed and that any unlikely partial failure is clearly identified.
- *Reduced Driver Fatigue* – The Smart-Vision system results in less lateral head and eye movement by the driver due to the monitor location on the A-pillar, and VSNA believes that this may result in lower levels of driver fatigue after extended driving times.

The exemption would apply to all CMV operators driving vehicles with the Smart-Vision system. VSNA 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.

### **Request for Comments**

FMCSA published a notice of the application in the **Federal Register** on September 26, 2019, and asked for public comment (84 FR 50878). The Agency received 5 comments from: the American Bus Association (ABA); the Commercial Vehicle Safety Alliance (CVSA); and 3 individuals.

ABA supports granting the application to allow use of the Smart-Vision system as an alternative to the two rear-view mirrors required by the FMCSRs. ABA stated:

Camera-based visibility systems or CBVSs, like the Smart-Vision technology, are vehicle technology advancements ABA believes should be deployed to improve safety of CMV operations. Such systems are currently being installed and tested by equipment manufacturers in limited capacity; however, to ascertain real-world viability, equipment manufacturers need to deploy these systems for use in actual commercial operations. As with FMCSA's decision to grant an exemption to Stoneridge, Inc. for use of its MirrorEye Camera Monitor System (see Docket No. FMCSA-2018-0141, published February 21, 2019), we believe the deployment of VSNA's system in place of mirrors will achieve a level of safety equivalent to or greater than the level of safety provided by the regulation.

In addition, ABA stated that when compared to traditional mirrors, the Smart-Vision system provides additional visibility benefits including (1) anti-glare, (2) improved visibility at night and during adverse weather conditions, and (3) elimination of blind spots by providing a broader field of vision around the vehicle. ABA noted that the improvements in driver visibility can lead to enhanced maneuverability in backing up or turning a large vehicle. ABA also stated that eliminating the side mirrors may also provide fuel efficiency gains and

carbon emission reductions, and may assist in reducing actions that lead to increased driver fatigue such as head and eye movements.

Further, ABA states that granting the exemption will be consistent with both (1) FMCSA's decision to grant an exemption to Stoneridge, Inc. for a similar system, and (2) recent activities by NHTSA relating to possible revisions to FMVSS No. 111. Specifically, NHTSA published a notice and request for public comment on August 28, 2019 (84 FR 45209), on a proposed collection of information relating to a multi-year research effort to learn about drivers' use of camera-based systems designed to replace traditional outside rearview mirrors. Initial research will focus on light vehicles and be followed by research examining camera-based visibility systems on heavy trucks. Additionally, NHTSA published an advance notice of proposed rulemaking on October 10, 2019 (84 FR 54533), seeking public comment on permitting camera-based rear visibility systems as an alternative to inside and outside rearview mirrors.

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 camera monitor systems technology. However, CVSA noted that its associate member companies that have some experience with camera monitor systems reported that "drivers responded favorably when testing the technology and preferred them in place of traditional side mirrors." CVSA noted that in 2018, roadside inspectors conducted 2.41 million vehicle inspections and issued only 2,497 violations of section 393.80 of the FMCSRs for failing to equip a vehicle with two rear vision mirrors – a violation rate of just 0.06 percent.

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 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.

Three individuals commented in support of granting the temporary exemption, and noted various advantages of the Smart-Vision system as compared to the rear vision mirrors required by the FMCSRs including (1) improved field-of-view around a CMV, including reduction/elimination glare and blind spots (2) increased visibility when driving at night and during inclement weather, and (3) reduced driver fatigue.

### **FMCSA Decision**

The FMCSA has evaluated the VSNA 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 Smart-Vision system 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 Smart-Vision system 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 system 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 provide drivers with improved vision in the field of view when compared to traditional rear-vision mirrors.

FMCSA notes that the Smart-Vision system is currently being used in a number of European countries as a legal alternative to the traditional rear-vision mirrors under the requirements of ISO (International Organization for Standardization) 16505:2019. That standard provides minimum safety, ergonomic, and performance requirements for camera monitor systems to replace mandatory inside and outside rearview mirrors for road vehicles. The ISO standard addresses camera monitor systems that will be used in road vehicles to present the required outside information of a specific field of view inside the vehicle. According to VSNA, there are approximately 300 vehicles certified with the Smart-Vision system to date.

FMCSA 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 Smart-Vision system 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.

In its application, VSNA notes that the Smart-Vision system is a fail-safe operating system due to its independent video processing of multiple camera images. VSNA states:

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 Smart-Vision multi-camera redundant design, mounting the camera housing high on the vehicle and providing both a power-fold and breakaway feature further reduce the potential damage that is possible in normal operating environments.

The FMCSRs impose several operational controls that will help ensure that the Smart-Vision system 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 Smart-Vision system) – 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 Smart-Vision system (effectively functioning as the rear vision mirrors) fails during operation, the driver must complete a driver vehicle inspection report at the completion of the work day as required 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 [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER] and ending [INSERT DATE

FIVE YEARS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER]. During the temporary exemption period, motor carriers operating CMVs may utilize the VSNA Smart-Vision system 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 VSNA Smart-Vision system, 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 Smart-Vision system 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).

Interested parties possessing information that would demonstrate that motor carriers operating commercial motor vehicles utilizing the VSNA Smart-Vision system 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. 31313(d), as implemented by 49 CFR 381.600, 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.

Issued on: January 6, 2020.

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Jim Mullen,  
Acting Administrator.

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