

February 19, 2015

Honorable Mark R. Rosekind, Administrator  
National Highway Traffic Safety Administration  
U.S. Department of Transportation  
1200 New Jersey Avenue, S.E.  
West Building  
Ground Floor, Room 12-140  
Washington, D.C. 20590-0001

## **Petition for Rulemaking:**

### **Requesting Issuance of a Rule to Require the Use of Forward Collision Avoidance and Mitigation Systems for Commercial Motor Vehicles**

PETITIONERS, Truck Safety Coalition, the Center for Auto Safety, Advocates for Highway and Auto Safety (Advocates), and Road Safe America, collectively “Petitioners,”<sup>1</sup> file this petition for rulemaking with the Administrator of the National Highway Traffic Safety Administration (NHTSA) pursuant to 49 C.F.R. § 552, requesting the commencement of a proceeding to establish a safety regulation to require the use of forward collision avoidance and mitigation braking systems (F-CAM) on all vehicles (trucks and buses) with a gross vehicle weight rating (GVWR) of 10,000 pounds (lb) or more.

The Truck Safety Coalition is a partnership between Citizens for Reliable and Safe Highways (CRASH) Foundation and Parents Against Tired Truckers (P.A.T.T), and is dedicated to reducing the number of deaths and injuries caused by truck-related crashes, providing compassionate support to truck crash survivors and families of truck crash victims, and educating the public, policy-makers and media about truck safety issues. Advocates for Highway and Auto Safety is an alliance of consumer, health, law enforcement and safety groups and insurance companies and agents working together to make America’s roads safer. The Center for Auto Safety works on all aspects of automobile ownership and use and its mission is to improve the safety, efficiency, reliability and cost to the consumer of motor vehicles while lowering the cost to society of vehicle crashes. Road Safe America is dedicated to reducing the injuries and deaths resulting from collisions between tractor-trailer trucks and passenger vehicles by effecting change to improve safety on America’s roadways.

The Petitioners have been involved in safety issues involving large trucks for many years and are convinced that F-CAM technology has the potential to result in significant safety, economic and societal benefits. The NHTSA is the appropriate agency to establish safety standards for newly manufactured large trucks which can reduce the occurrence of injuries and

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<sup>1</sup> Please address correspondence to Jackie Gillan, President, Advocates for Highway and Auto Safety, 750 First Street, N.E., Suite 901, Washington, D.C. 20002.

fatalities associated with the collision these systems will address.<sup>2</sup> The facts on which the petition and request for an order are based are set forth below.

### **Basic Technology**

Forward Collision Warning (FCW) is a vehicle-based safety system that generates a visual, audible, or haptic (vibration) warning for the driver in the event the driver's vehicle comes within a predefined distance and closing rate with a vehicle traveling in front of it, known as the target vehicle. In situations where the driver does not respond to the FCW alert signals, Collision Mitigation Braking (CMB) automatically applies the foundation brakes through the electronic stability control (ESC) system to reduce the impact speed or entirely prevent the collision with the target vehicle. F-CAM systems are defined as forward looking radar-based systems that combine FCW alert signals with CMB automatic braking capability.<sup>3</sup> In Europe, similar technology is referred to as advanced emergency braking systems (AEBS). The NHTSA has been studying F-CAM and its underlying FCW technology for more than a decade.<sup>4</sup> Most recently, the NHTSA completed an evaluation of F-CAM systems in medium/heavy commercial vehicles (straight and combination trucks with a GVWR of 10,000 lb or more). The NHTSA's assessment documents the need, capability, and benefits of mandating F-CAM systems in all large trucks, and provides substantial support for this petition.

### **Scope of the Problem**

Over the past three years, the United States has seen year-after-year increases in the number of fatalities and injuries occurring in collisions involving large trucks. The number of fatalities has increased by 16 percent since 2009 from 3,380 to 3,921 in 2012. The number of people injured in these crashes has increased by 40 percent, from 74,000 to 104,000.<sup>5</sup> In 2012 there were 317,000 large trucks involved in traffic crashes in the United States.<sup>6</sup> With the total tonnage by weight of freight shipments by truck predicted to increase substantially, by as much as 63 percent by 2040, identifying and implementing safety measures to reduce the impact of large truck involved crashes is a necessity which will only become more important as time progresses.<sup>7</sup> Large truck involved crashes represent not only a substantial safety cost, but a

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<sup>2</sup> National Traffic and Motor Vehicle Safety Act, §§ 1, 102, Pub. L. 89-563 (1966), codified at 49 U.S.C. §§ 30101(a) and 30111(a).

<sup>3</sup> Woodrooffe, J., et. al., Performance Characterization and Safety Effectiveness Estimates of Forward Collision Avoidance and Mitigation Systems for Medium/Heavy Commercial Vehicles, p. xvi, Rep. No. UMTRI-2011-36, UMTRI (August, 2012) (F-CAM Report).

<sup>4</sup> Kiefer, et. al., Development and Validation of Functional Definitions and Evaluation Procedures For Collision Warning/Avoidance Systems, DOT HS 808-964, NHTSA (August, 1999) (CAMP Report).

<sup>5</sup> Traffic Safety Facts 2010 Data: Large Trucks, DOT HS 811 628, NHTSA (Jun., 2012); Traffic Safety Facts 2011 Data: Large Trucks, DOT HS 811 752, NHTSA (Apr., 2013); Traffic Safety Facts 2012 Data: Large Trucks, DOT HS 811 868, NHTSA (Jan., 2014).

<sup>6</sup> Traffic Safety Facts 2012 Data: Large Trucks, DOT HS 811 868, NHTSA (Jan., 2014).

<sup>7</sup> Freight Facts and Figures 2012: Table 2-1 Weight of Shipments by Transportation Mode: 2007, 2011, 2040, Federal Highway Administration (FHWA), available at [http://www.ops.fhwa.dot.gov/freight/freight\\_analysis/nat\\_freight\\_stats/docs/12factsfigures/table2\\_1.htm](http://www.ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/12factsfigures/table2_1.htm).

financial cost as well. For large truck involved crashes the average cost of a property damage only crash is \$15,114 but these average costs increase to \$195,258 for non-fatal injury crashes and \$3.6 million for fatal crashes. At an average cost of nearly \$100,000 (\$91,112 in 2005 dollars) per crash involving a large truck, the financial impact of addressing this population of collisions is significant.<sup>8</sup>

A large portion of these crashes are rear-end crashes in which the large truck is the striking vehicle that rams into another vehicle on the roadway. In its most recent report, the NHTSA noted that, based on data from 2003 through 2008, large trucks are the striking vehicle in approximately 32,000 rear-end crashes resulting in 300 fatalities and injuring over 15,000 people annually.<sup>9</sup> The Fatality Analysis Reporting System (FARS) indicates that each year more than 1,600 large trucks are involved in fatal crashes where the front end of a large truck is the initial point of impact.<sup>10</sup> Previously, the agency found that “[i]n 1996, over 1.8 million rear-end crashes occurred in the United States with approximately 2,000 associated fatalities and 800,000 injuries. Rear-end crashes accounted for approximately 25% of all police-reported crashes and 5% of all traffic fatalities.”<sup>11</sup> Rear-end crashes are precisely the crash mode that F-CAM technology has been developed to remediate.

### **State of the Technology**

The NHTSA recently evaluated three versions of F-CAM systems including a Current Generation (CG) system, a Next Generation (NG) system, and finally a Future Generation (FG) system. The CG system was representative of the capabilities of F-CAM systems available in production vehicles at the time of the research in 2010. The NG system was intended to be representative of F-CAM systems that would be available in production models within a year, or had been designed to meet the initial performance requirements for AEBS that were established by regulations adopted in the Economic Commission for Europe (ECE) and which go into effect in 2015. Finally, the FG system evaluated was estimated to be able to meet the longer-term performance requirements of the ECE AEBS regulation that are scheduled to take effect in 2018. The NHTSA concluded that the key difference between the expected performances of the three F-CAM system levels evaluated is that a CG system could not address collisions with a stopped lead vehicle, whereas the slightly more advanced NG and FG systems are capable of identifying a stopped lead vehicle and initiating braking. The NHTSA assumed that NG systems would have increased capability to deal with moving lead vehicles and limited capability to deal with stopped lead vehicles, and that FG systems would have increased capability to deal with both moving and stopped lead vehicles.<sup>12</sup>

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<sup>8</sup> Zaloshnja & Miller, Unit Costs of Medium and Heavy Truck Crashes, RRA-07-034, Federal Motor Carrier Safety Administration (FMCSA) (Mar., 2007).

<sup>9</sup> F-CAM Report, pp.xxii-xxiii.

<sup>10</sup> Traffic Safety Facts 2011, Table 46, Collision with Motor Vehicle in Transport by Initial Point of Impact, DOT HS 811 754, NHTSA (2013). This may mean that the number of fatalities in large truck crashes that could be prevented or ameliorated by F-CAM technology is far higher than 300 deaths annually.

<sup>11</sup> CAMP Report, p. 1-5.

<sup>12</sup> F-CAM Report, Section 1.2, *About the Technology*.

As discussed below, the NHTSA undertook a significant effort to estimate and measure the benefits of the F-CAM systems based on the three categories of functional performance. The NHTSA analysis was limited to work conducted with a single supplier of F-CAM systems, and, aside from the FG system, the study was limited to radar based systems with limited capabilities. Nevertheless, just four years after NHTSA's characterization of the CG systems, many suppliers are already offering more robust NG- and FG-type F-CAM systems and the currently available technology is capable of providing significant benefits if installed throughout the new vehicle fleet.

### **F-CAM Technology Availability**

Mercedes Benz introduced an F-CAM system called "Active Brake Assist" in its large trucks in 2006 and its motorcoaches in 2008. These systems would have likely performed as a CG level system. In 2010, Mercedes Benz introduced "Active Brake Assist 2" which enabled the system to also react to stationary objects; a system which can be classified as an NG level system. This system was later introduced on motorcoaches in 2012. Finally, Mercedes Benz introduced the "Active Brake Assist 3" in large trucks in late 2012 and according to the company has increased the capability to react to both moving and stationary objects, which would likely perform as an FG level system.<sup>13</sup> According to Meritor WABCO, the supplier which partnered with the NHTSA to conduct its recent research, the company introduced its version of an F-CAM system called "OnGuard" in 2007.<sup>14</sup> More importantly, Meritor WABCO announced release of its NG level systems which would include partial braking capability in response to stationary objects in 2014.<sup>15</sup> A competing supplier, Bendix, launched its F-CAM technology with stationary object alerts in 2011.<sup>16</sup> Between the two major U.S. suppliers, many of the major large truck manufacturers already offer F-CAM systems on a wide number of vehicles including, International, Kenworth, Peterbilt, Mack, and Freightliner.<sup>17</sup> In all, F-CAM systems are readily available on a wide variety of large truck makes and models.

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<sup>13</sup> The Emergency Braking System in Commercial Vehicles: Active Brake Assist; Daimler, available at <https://www.daimler.com/dccom/0-5-1210220-1-1521413-1-0-0-1210338-0-0-135-0-0-0-0-0-0-0.html>.

<sup>14</sup> Meritor WABCO Collision Mitigation System Substantially Improved Commercial Vehicle Fleet Safety, Meritor WABCO press release, available at [http://www.wabco-auto.com/nc/en/media/media\\_center/press\\_releases\\_wabco/press\\_releases\\_single\\_view/news-article/meritor-wabco-collision-mitigation-system-substantially-improves-commercial-vehicle-fleet-safety/](http://www.wabco-auto.com/nc/en/media/media_center/press_releases_wabco/press_releases_single_view/news-article/meritor-wabco-collision-mitigation-system-substantially-improves-commercial-vehicle-fleet-safety/).

<sup>15</sup> *Id.*

<sup>16</sup> Bendix Launches Bendix Wingman Advanced; Bendix Commercial Vehicle Systems, available at [http://www.bendix.us/media/documents/press\\_releases/2011/bendixlauncheswingmanadvanced.pdf](http://www.bendix.us/media/documents/press_releases/2011/bendixlauncheswingmanadvanced.pdf).

<sup>17</sup> See press releases from individual manufacturers about vehicle offerings; International at <http://www.internationaltrucks.com/trucks/membersmonthly/february2012/waste>, Kenworth at <http://www.kenworth.com/news/news-releases/2012/march/kenworth-to-offer-bendix-wingman-advanced.aspx>, Peterbilt at <http://www.peterbilt.com/about/media/2012/343/>, Mack at <https://www.macktrucks.com/default.aspx?pageid=8573>, and Freightliner at <http://trailer-bodybuilders.com/archive/freightliner-meritor-wabco-offer-collision-safety-system>.

While nearly every manufacturer is offering F-CAM systems on new vehicles, available information indicates that there are about 100,000 F-CAM systems (of varying performance levels) installed in existing tractor trailers on the road today. This number, however, represents less than 3 percent of the more than 3 million 'standard' tractor-trailers (class 8) on the road today, and is an even smaller percentage of the nearly 11 million large trucks and buses registered in the U.S.<sup>18</sup> Moreover, since the systems that have already been installed, and are currently being installed, are unregulated, their performance is neither uniform nor guaranteed to meet specific performance standards.

### **Regulation Will Spur Dissemination and Assure Minimum Performance Levels**

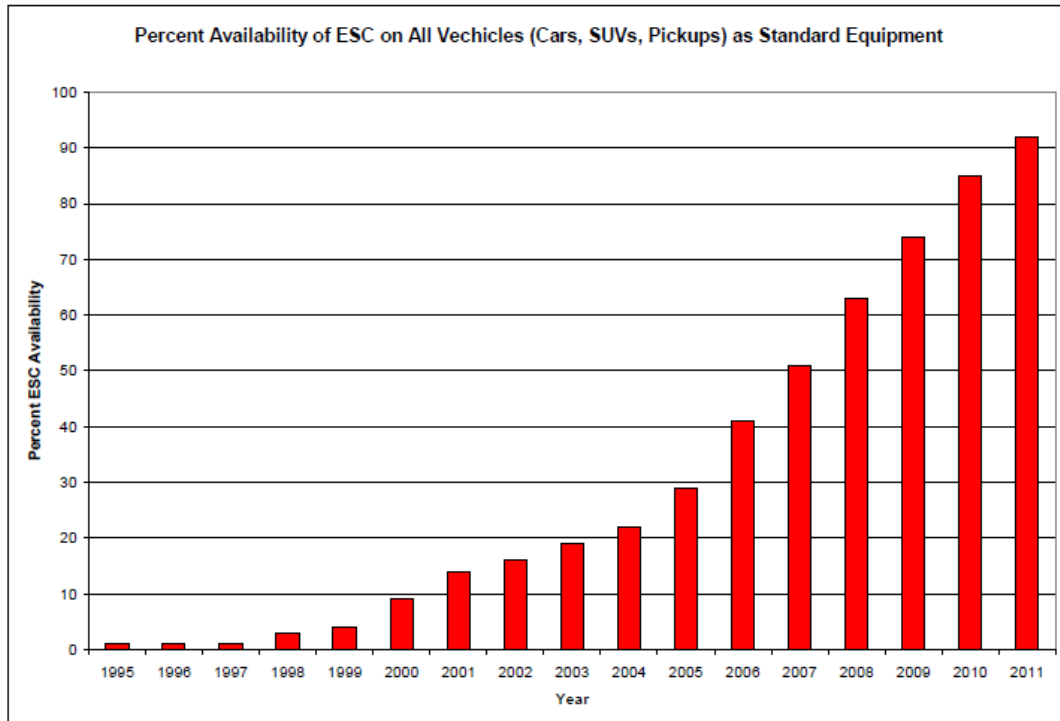
Mandatory regulation is the only means capable of ensuring widespread implementation and the uniform level of performance necessary to realize optimal safety benefits throughout the vehicle fleet. Without regulation, innovation is left to the financial interest of the industry and adoption is limited to well-capitalized user fleets which, in turn, limits the number of newly manufactured vehicles that are capable of achieving the safety benefits of F-CAM technology. Regulation is the best and swiftest means for ensuring that all highway users will be afforded the same basic minimum levels of performance and safety benefits.

The role of federal regulation in expediting the dissemination of new technology is well documented. Data on the implementation of electronic stability control (ESC) in the passenger vehicle fleet illustrates the vital role of rulemaking to achieving the full potential of safety benefits for new technologies. The following chart illustrates the market penetration of ESC by year.<sup>19</sup>

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<sup>18</sup> Commercial Motor Vehicle Facts – March 2013, FMCSA, available at <http://www.fmcsa.dot.gov/documents/facts-research/CMV-Facts.pdf>.

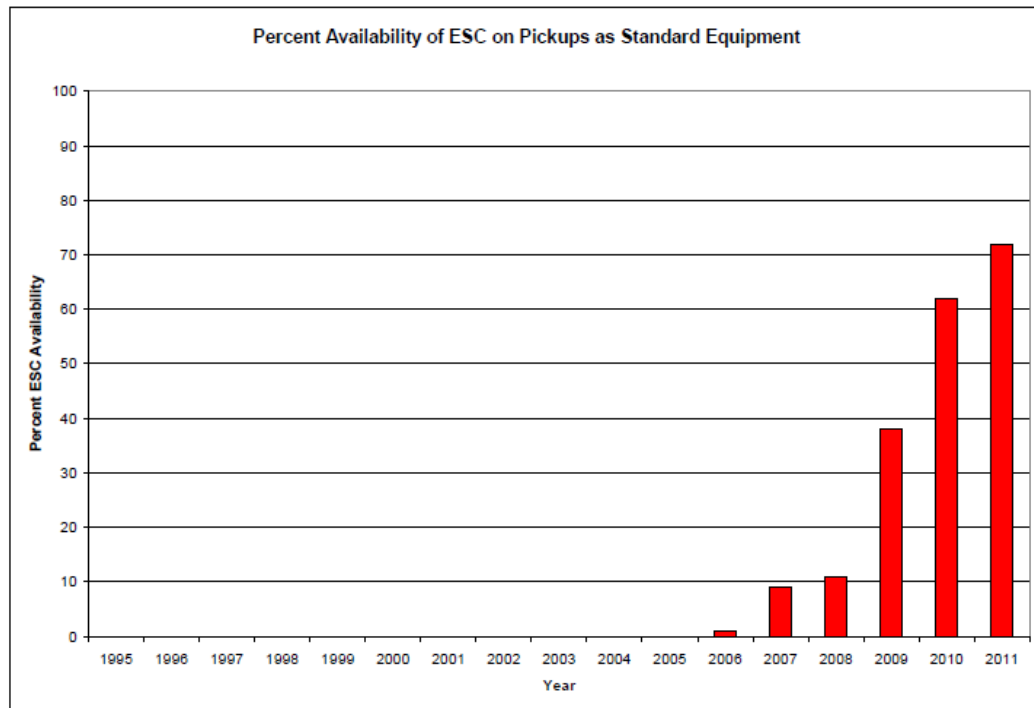
<sup>19</sup> Vehicles Equipped with Electronic Stability Control (ESC), Insurance Institute for Highway Safety, available at <http://www.iihs.org/ratings/esc/esc.aspx>.



Despite the availability of ESC for over a decade prior to regulation, installation of ESC technology lagged until the enactment of the legislative mandate in 2005,<sup>20</sup> and was not standard equipment until the issuance of the 2007 final rule which required ESC be installed in all light vehicles manufactured after September 1, 2011.<sup>21</sup> The dramatic impact of the mandatory ESC regulation on the dissemination of the technology is clearest in the pickup truck portion of the new vehicle fleet as demonstrated in the following chart:

<sup>20</sup> Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users of 2005 (SAFETEA-LU), § 10301, Pub. L. 109-59 (Aug. 10, 2005).

<sup>21</sup> Federal Motor Vehicle Safety Standards; Electronic Stability Control Systems; Controls and Displays, 72 FR 17236 (Apr. 6, 2007).



In light of the substantial safety benefits afforded by ESC,<sup>22</sup> every year of unnecessary delay added a year in which the significant safety benefits of ESC were denied to the public because fewer vehicles were equipped with this life-saving technology. Delays in rulemaking for other technologies, such as air bags, have resulted in similar protracted delays in delivering the life-saving benefits of other vehicle safety equipment. Since it takes decades or more for a new safety technology to permeate through the entire vehicle fleet, the failure to expedite installation of safety advances has a considerable negative downstream impact on public safety. For this reason, regulation requiring mandatory compliance with uniform performance standards of proven technologies remains the best method for improving motor vehicle and public safety. Issuance of a regulation to require performance standards for F-CAM technology could substantially expedite the dissemination of this life-saving technology into the large truck fleet.

An additional benefit of regulation and widespread installation is the reduction in cost often associated with mass production and increased sales. The NHTSA recently published a tear-down analysis of collision mitigation braking (CMB) systems for heavy trucks. In the teardown

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<sup>22</sup> *Crash Prevention Effectiveness of Light-Vehicle Electronic Stability Control: An Update of the 2007 NHTSA Evaluation*, DOT HS 811 486, NHTSA (June, 2011), available at <http://www.nrd.nhtsa.dot.gov/Pubs/811486.pdf>. NHTSA identified that ESC was associated with a 23 percent reduction in the likelihood that a passenger car would be involved in a fatal crash and a 20% reduction for light trucks and vans (LTVs). The benefits of ESC were even stronger when examining fatal single vehicle crashes and, in particular, rollover crashes.

analysis of CMB systems from the two most significant suppliers of CMB systems, Bendix and Merritor Wabco, the agency concluded that the cost based prices of current CMB systems is between \$270 and \$290. However the agency noted that the “single service part quote” from a dealer was more than 40 times the cost based prices. The agency stated that the “[c]urrent volumes [of sales of CMB systems] may be a contributor to this price difference.”<sup>23</sup> This significant markup identifies ample room for price decreases which would likely accompany increased adoption and the economies of scale provided by regulation that makes CMB systems standard equipment.

### **Estimated Safety Benefits**

NHTSA developed estimates of the benefits of F-CAM systems through a multipronged approach. The systems were first tested in vehicles on test tracks to estimate performance. Next, historical crash data was analyzed to identify a target population of collisions which would likely be addressed by the technology. Then, a set of 10,000 collision scenarios with varying parameters were developed to approximate the types of collisions and their variants identified in the crash data analysis. Finally, simulations of the scenarios including the expected performance of the technologies were undertaken to determine the number of collisions which could be avoided or mitigated by each system. In addition to the analysis described above, the NHTSA study also examined the experiences of fleets using F-CAM equipped vehicles in operating environments.

Based on the analysis using system performance, crash data, and simulation work, the NHTSA study identified substantial benefits in terms of reductions in the number of fatalities, injuries and overall crashes involving large trucks striking other vehicles from the rear. For CG systems, the NHTSA study estimates that, at full deployment in the vehicle fleet, this level of technology could save 70 lives per year, a reduction of 24 percent from the annual toll of 293 estimated total fatalities. Similarly, CG systems are estimated to prevent injury to 3,448 persons, a reduction of 23 percent from the 14,650 injured annually. With fleetwide adoption of NG systems, the NHTSA estimates that 128 lives per year could be saved, a reduction from current annual fatalities of 44 percent. The number of injured persons would fall by 6,959 per year, a reduction of 46 percent. Most impressive are the estimates for FG systems where the NHTSA estimates that fleetwide adoption could save 166 lives per year, a reduction of 57 percent from current annual fatalities. The number of injured persons would fall by 8,361 per year, a reduction of 56 percent.

In terms of crashes, CG systems are estimated to be able to prevent as many as 2,539 crashes each year, representing 16 percent of annual tractor-trailer rear-end striking crashes. NG systems are estimated to prevent 4,542 crashes each year, which would account for 28 percent of annual tractor-trailer rear-end striking crashes. Finally, FG systems were predicted to

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<sup>23</sup> Cost & Weight Analysis for CMB and LDWS for Heavy Trucks, NHTSA, Jun. 2013, Docket No. NHTSA-2011-0066-0085.



prevent as many as 6,323 tractor-trailer rear-end striking crashes per year, accounting for 40 percent of the annual average.<sup>24</sup>

The fleet analysis performed as part of the NHTSA study largely confirmed these results when it was identified that trucks on the road without F-CAM systems were more than twice as likely to be the striking vehicle in a rear-end collision. In one fleet, it was identified that trucks *without* the F-CAM system were 2.26 times more likely to be the striking vehicle in a rear-end crash than trucks with the system. In a second fleet, those without the F-CAM system were 1.96 times as likely to be the striking vehicle.

The NHTSA relied on earlier work which calculated the estimated cost associated with fatalities and various levels of injury.<sup>25</sup> The costs included those related to medical costs, emergency services, property damage, lost productivity from delays, and total lost productivity. The NHTSA also accounted for the increase in the value of a statistical life (VSL), or the approximate cost associated with the loss of the average person's life, at the time of the research to \$6.1 million.<sup>26</sup> Using these calculations, the costs associated with various levels of injury varied from approximately \$8,600 for an involved person who wasn't injured up to just over \$7 million for a fatality. Overall, in economic terms, the range of benefits from F-CAM systems spans from \$1.4 billion per year for the CG systems, to \$2.6 for NG systems, and up to \$3.1 billion per year for FG systems.<sup>27</sup> The estimated costs did not include collision events subsequent to the initial impact, estimated reductions in the number of injuries to the occupants of the striking vehicle (large truck), or the possible influence of the technology on driver behavior possibly increasing overall safety.<sup>28</sup> The NHTSA study readily acknowledged that the benefits estimates provided are conservative and probably underestimate the full cost savings that could be achieved.

In support of the AEBS regulations adopted in 2012, the ECE identified substantial benefits in a 2008 report. The report identified that implementation of "Current" AEBS systems in buses and commercial trucks which could address front-to-rear collision with four-wheeled vehicles and rigid fixed objects on the road could prevent as many as 386 fatalities per year. Implementation of "Near Future" systems which would add functionality to address collision with fixed objects off the road and pedestrians could prevent as many as an additional 1,010 fatalities annually. Finally, implementation of systems the report classified as "longer term future developments" which would additionally address head-on and front-to-side collisions at

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<sup>24</sup> F-CAM Report, p. xxvii, Table E-6, Target Rear-end Striking Crash Types Reduced, Tractor-Semitrailers.

<sup>25</sup> Unit Costs of medium and Heavy Truck Crashes, Zaloshnja and Mille, FMCSA-RRA-07-034, Mar. 2007.

<sup>26</sup> The VSL of \$6.1 million does not account for the more recent increase in VSL according to DOT in 2013 which now places the VSL at \$9.1 million, with a range of \$5.2 million to \$12.9 million, to be used in current benefits-cost analyses performed by agencies in the U.S. Department of Transportation.

<sup>27</sup> F-CAM Report, Section 6.3, *Total Estimated Benefits*.

<sup>28</sup> F-CAM Report, Section 7.1, *Crash Analysis Findings*.

intersections could prevent as many as 1,372 additional fatalities.<sup>29</sup> These benefits estimates from 2008 could be revised upward in the event that AEBS levels of performance exceed those required by regulation for 2015 and 2028.

An additional benefit which has not been quantified is the potential savings in insurance premiums for CMVs utilizing F-CAM systems. In 2009, the Federal Motor Carrier Safety Administration (FMCSA) analysis of the benefits and costs of forward collision warning systems included the following hypothetical example:

Insurance companies consider many factors when determining motor carrier premium payments. However, if the insurance provider is not able to generate its required return, or experiences a loss by covering a carrier, it is highly likely that the insurance provider will increase the motor carrier's annual premiums. For example, increasing the \$4,000 premium by 10 percent because of a rear-end crash, results in a new annual premium per truck of \$4,400, an increase of \$400 per truck. Over a five-year period without any further premium increases above the \$400 per truck, this is an additional cost in premium payments of \$2,000 per power unit. In contrast, the expected cost associated with financing an FCWS unit is \$1,610.00. If the purchase of this unit prevents a crash that would result in higher insurance premiums, it will save a motor carrier approximately \$390 per power unit.<sup>30</sup>

These prospective savings would be in addition to any possible decreases in current premiums for CMV's employing F-CAM systems.

The predicted benefits of F-CAM technology clearly warrant regulation and performance standards requiring the use of F-CAM technology on both a societal and economic basis.

### **Existing Regulations and Test Requirements**

In 2012, the ECE enacted legislation mandating AEBS, which act in a fashion identical to F-CAM systems. The ECE regulation mandates AEBS for new large vehicles starting in 2015. The regulation specifies separate performance tests, one in which the lead (also called the struck or target) vehicle is travelling at a reduced rate of speed, and a second in which the lead vehicle is stopped. In each test, the subject, or striking, vehicle is operating at a speed of 50 miles per hour (mph). Under the first phase requirement for 2015, trucks must be equipped with AEBS which avoid collisions between a truck moving at 50 mph and a lead vehicle moving at 20 mph. The first phase also requires a truck moving at 50 mph to reduce speed by at least 6.2 mph when approaching a stopped lead vehicle. The regulation includes a more-stringent second phase of performance requirements applicable to new vehicles beginning in 2018. In the second phase, all vehicles must have AEBS which will avoid a collision between

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<sup>29</sup> Grover, et. al., Automated Emergency Brake Systems; Technical Requirements, Costs and Benefits, p. 66, Table 16: Summary of Potential Benefits, PPR 227 Contract ENTR/05/17/.01, TRL (April, 2008).

<sup>30</sup> Analysis of Benefits and Costs of Forward Collision Warning Systems for the Trucking Industry, Report No. FMCSA-RRT-09-021, FMCSA (Feb. 2009).

a subject vehicle traveling at 50 mph and a lead vehicle traveling at 7.5 mph. The second phase also requires the subject vehicle travelling at 50 mph to reduce speed by at least 12.4 mph when approaching a stopped lead vehicle.<sup>31</sup>

For comparison, the NHTSA has recently put forward testing criteria for crash imminent braking (CIB) systems in light vehicles. The first test would require CIB equipped vehicles travelling at 25 mph to avoid collisions with a lead vehicle traveling at 10 mph. In the second test, a CIB equipped vehicle travelling at 45 mph would have to reduce its speed by at least 9.8 mph before impacting a lead vehicle traveling 20 mph. Finally, CIB equipped vehicles travelling at 25 mph would have to reduce their speed by at least 9.8 mph before impacting a stopped lead vehicle.<sup>32</sup> In almost all cases, the proposed NHTSA test speed, avoidance and speed reduction requirements are less stringent than those already established by the ECE. While the NHTSA has put forward these testing requirements, the agency has not proposed adopting the CIB test performance requirements by regulation.

### **Summary**

The NHTSA has conducted a significant amount of research in the area of F-CAM systems. The performance of current and near-future systems have been tested and quantified. Manufacturers and suppliers have developed and are already installing these systems in production vehicles, indicating that the technology has been researched, developed, tested and deployed and is readily available in the marketplace. Benefits estimates have been developed and indicate sizeable societal and financial benefits for widespread adoption of the technology. Moreover, the substantial benefits identified were acknowledged to be likely conservative estimates. The benefits estimates also failed to include the rapid pace at which advances in F-CAM technologies are taking place which will likely enable these systems to address additional types of collisions in the future such as those involving pedestrians and cross traffic. With the introduction and widespread adoption of camera based systems, it is likely that significant improvements in system capabilities and effectiveness will be realized. Finally, testing regimens have been developed and regulations in other nations have already been enacted which will mandate the installation and performance of these systems, pushing technology development further ahead and increasing market penetration of these systems which will likely result in reduced costs as economies of scale improve. The NHTSA has publicly announced a 2015 timeline for completing additional research activities related to F-CAM technology for heavy vehicles.<sup>33</sup> The initiation of a rulemaking process now will allow for a dovetailing between the research and regulatory processes which will reduce the extended fleet penetration time associated with past regulation. Research indicates that each year of

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<sup>31</sup> Commission Regulation EU No 347/2012; of 16 April 2012 implementing Regulation (EC) No 661/2009 of the European Parliament and of the Council with respect to type-approval requirements for certain categories of motor vehicles with regard to advanced emergency braking systems; available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:109:0001:0017:EN:PDF>.

<sup>32</sup> Forward-looking Advanced braking Technologies Research Report, p. 23 NHTSA DOT, June 2012.

<sup>33</sup> NHTSA Heavy Vehicle Crash Avoidance Research Overview, NHTSA presentation at SAE Government Industry Meeting, Jan. 2014.

delay is associated with needless loss of as many as 166 lives and injury to over 8,000 individuals.

**Conclusion**

For the reasons stated and documented above, the Petitioners request that the NHTSA prescribe and adopt by rule performance requirements and standards for the mandatory installation of F-CAM safety technology in large trucks,




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Jackie Gillan  
President  
Advocates for Highway  
and Auto Safety



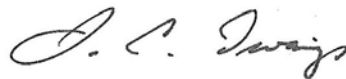
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Clarence Ditlow  
Executive Director  
Center for Auto Safety



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John Lannen  
Executive Director  
Truck Safety Coalition



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Stephen C. Owings  
President  
Road Safe America  
Former Chair: FMCSA Motor Carrier Safety  
Advisory Committee