

**Public Comments Re: Cost/Benefit Analysis
in NHTSA Proposed Underride Rulemaking
on Rear Guards for Tractor-Trailers & for Single Unit Trucks**

Note: Although the original purpose of this document was to highlight flaws in NHTSA cost/benefit analysis in underride rulemaking, it has become a summary of all of the Public Comments with links to each commenter.

Comments posted in response to the NPRM for Rear Underride Guards on Trailers [NPRM Upgrade Underide](#)

1. **Comment from Insurance Institute for Highway Safety (IIHS)** The agency has issued a separate Advanced Notice of Proposed Rulemaking (ANPRM) discussing the possibility of requiring straight trucks to be equipped with underride guards. The ANPRM indicated that such a rule would not be cost-effective. However, IIHS has submitted comments to NHTSA (2015) expressing its concern that the ANPRM overestimates the costs and underestimates the benefits of requiring straight trucks to be equipped with underride guards. With regard to trailers, the current NPRM declines to reduce the number of exempt types. IIHS believes this decision was based on questionable data and that removing the exclusion for wheels-back trailers would be feasible and beneficial.
2. **Comment from Seven Hills Engineering, LLC** Continuing to allow truck and trailer induced PCI to occur at otherwise survivable crash speeds (delta-V 's of 45mph and beyond) discards years of crash worthiness efforts and wastes the safety benefits we have come to expect and pay for in our cars. From an engineering perspective the need for vehicle crash compatibility in the form of adequate heavy truck underride guarding is apparent in order to protect against the hazard of PCI which exposes the vulnerable head and neck region to severe, potentially fatal or crippling injury. This hazard - easily remedied by readily available materials and simple structural analysis - is present also on the sides of heavy trailers and trucks. The FMVSS standard should be broadened to include guarding for the sides of heavy trailers. This was the original intent of NHTSA rulemakers in the 1969 NPRM, Docket No. I-II; Notice 2.
3. **Comment from National Propane Gas Association** We commend the thorough analysis by NHTSA to assess the feasibility and likely safety improvements that incorporation of Canadian standards to FMVSS No. 223 and No. 224 would present. Further, the diligent review of potential safety benefits compared to practical challenges led to the agency's conclusion that administering FMVSS No. 224 with the NPRM modifications to currently excluded vehicles is not reasonable. To ensure understanding, we ask NHTSA to provide clarification in the final rule that the exclusion from FMVSS No. 224 is unchanged.
4. **Comment from Courtney Wood** The die has been cast; the precedent set. Allowing the truck lobby to continue buying exemptions for its constituency is cruel, unconscionable, unfair, and inconsistent.

The rest of us -- millions and millions; hundreds of millions -- have had to accept ever-increasing governmentally mandated expense on our new cars, in the interest of safety. Seat belts, air bags, and tire ratings are but a few conventions we have had to pay money for, for decades.

In the meantime, the trucking industry is allowed to continue killing people with an absence, or inadequacy, of protection against cars going under trucks. Again, the major proportion of cost is being shifted to everyday citizens, at the benefit of truckers. There are hundreds of people killed

annually by the grossly inadequate "protection" currently in effect. Has a single trucker in the past decade died as a result of truck underride -- or any other kind of rear end crash involving an automobile? The country began to take drunk driving a little more seriously after the death of a teenager in California. This prompted her mother to found MADD. Countless lives have been saved, as a result.

Each of these major changes took place after the death of one person. How many people have to die before you get serious about protecting the occupants of automobiles who have the misfortune of winding up under trucks? Would that number suddenly decrease by a drastic amount, if one of you, or one of your family members, wound up headless?

Please don't let the trucking industry continue to avoid a fairly simple rule -- of the type virtually every one of the hundreds of cars which will be destroyed under trucks, this year, have. If we have to have air bags, how about putting something on trucks that will give us a chance, if the air bags deploy? If we have to wear seat belts which restrict our movement, truckers should be required to eliminate one reason people need to suddenly duck.

Notice I said "eliminate." You seem to contemplate an almost laughable change.

5. **Comment from Advocates for Highway & Auto Safety** **The NHTSA Underestimates the Safety Benefits of the NPRM** The Preliminary Regulatory Evaluation (PRE) for this NPRM excludes numerous crashes in which an upgraded underride guard would ameliorate the crash, save lives and prevent injuries, based on faulty estimation of the speed of the vehicles involved. As noted above, the PRE states that annually there are 72 light vehicle occupant fatalities in crashes into the rear of trailers with rear impact guards with passenger compartment intrusion (PCI).¹² The agency further notes that approximately 26 percent of these crashes occur at speeds of 35 miles-per-hour (MPH) or less.¹³ This suspect assumption curtails the number of crashes where an upgraded rear impact guard could prevent a death or serious injury to a vehicle occupant based on a distribution of impact speed estimates from the Large Truck Crash Causation Study (LTCCS).¹⁴ However, speed estimates in underride crashes are notoriously inaccurate. In fact, the agency notes that the LTCCS could only estimate impact speeds for 30 percent of the data that was studied.¹⁵ The 2013 study performed by the University of Michigan Transportation Research Institute (UMTRI) included 977 total rear end crashes involving a fatality with 563 cases of light vehicles impacting the rear of the truck.¹⁶ Only 193 of those crashes were able to be analyzed to produce a speed estimate.¹⁷ Additionally, only a portion of these 193 crashes were used to estimate the speed of a vehicle when it impacted a truck towing a trailer.¹⁸ The reliance on these suspect estimates significantly reduced the agency's estimate of the number of crashes and occupants that could be aided by the upgrade in rear protection guards. The estimated fatality benefits in the PRE could, therefore, be viewed as a lower bound of the range of potential fatalities that could be averted based on the analysis of vehicle speed. Thus, NHTSA is underestimating the lives and injuries that can be saved by this critical agency action.
6. **Comment from Truck Safety Coalition (TSC)** Additionally, in catastrophic crashes, rear underride collisions bypass crumple zones and prevent air bag deployment – both vital safety advances in improving protection of passenger vehicle occupants during crashes. Of the fatal collisions between large trucks and passenger vehicles during 2013, NHTSA reported that large truck rear impacts comprised 20 percent.⁴ Because the requisite guards are insufficient to produce a good safety result in crashes involving certain impact speeds as well as those crashes with overlap conditions, there are numerous truck crash injuries and fatalities that this rulemaking, in its current form, will not prevent. The agency did not address the 74 percent of

crashes at speeds exceeding 35mph,⁵ just one of several missed opportunities. NHTSA also failed to improve upon a past error, excluding wheels back trailers from FMVSS 224. The agency could have and should have used this rulemaking to include this type of trailer, which, according to NHTSA, account for 20 percent of fatal light vehicle impacts into the rear of trailers.⁶ Additionally, the agency denied our request to mandate guards that offer sufficient protection in crashes where there was overlap, which often occur in the aforementioned catastrophic collisions. Given that the agency itself found that overlap occurs in 40 percent of all fatal collisions involving a light vehicle crashing into the rear of trailers,⁷ NHTSA should reevaluate its position that enhancing protections for more than one third of light vehicle underride crashes would not benefit safety. We firmly believe that the agency’s analysis of this rulemaking is incomplete and falls short of enacting meaningful safety reforms. The data used to determine the benefit of requiring underride guards on trailers and semitrailers is seriously flawed and of great concern. The target population, identified as light vehicle impacts to the rear of trailers and semitrailers that result in PCI with impacts speed of 35 mph or less, itself contains several problems. The identification of PCI occurrences relies on data collected from police reports and the Fatality Analysis Reporting System (FARS), yet neither typically include reporting of intrusion. ² Id. ³ Insurance Institute for Highway Safety (IIHS), Petition for Rulemaking, 49 CFR Part 571 Federal Motor Vehicle Safety Standards; Rear Impact Guards; Rear Impact Protection, pg. 2 (Feb. 2011) (IIHS Petition). ⁴ National Highway Traffic Safety Administration. 2015. “Traffic Safety Facts: Large Trucks, 2013.” Washington, DC: US Department of Transportation. <http://www-nrd.nhtsa.dot.gov/Pubs/812150.pdf> ⁵ 80 FR 78450 ⁶ 80 FR 78427 ⁷ 80 FR 78431 As a result of this faulty data collection process, the NHTSA undercounted the net benefits of this proposed rule (\$2.8 million to \$3.5 million) by undercounting the deaths and injuries that would have been prevented under the proposed standard,⁸ thereby undercounting the Value of Statistical Life (VSL) savings used in calculating the net benefit. For that same reason, NHTSA overestimated the net cost of expanding this proposed rule to require older trailers be retrofitted with CMVSS No. 223 compliant guards (-\$375 million to -\$414 million). ⁹

7. **Comment from D. J. Young, III** Decision not to require used trailers to be retrofitted (end of Section 7, page 32): You state that your analysis “indicates such a retrofitting requirement would be very costly without sufficient safety benefits.” If more lives would be saved and more injuries would be prevented by requiring new trailers to meet the new standards, then logic dictates that more lives would be saved and more injuries would be prevented by requiring used trailers to be retrofitted. Indeed, the crash tests cited for new trailers of different manufacturers tested on a Chevy Malibu suggest substantial disparities. It can be expected that the disparities would be magnified if tests were conducted on some of the used equipment in the nation’s fleet. If it is not worth the cost to retrofit an old trailer (in which case it should be scrapped), that should be the decision of its owner rather than the decision of NHTSA. ⁴. The proposal could (and should) go further (see p. 30). You estimate the 93% of the new trailers already comply with the proposed standard, which represents only a slight increase over the old standard (e.g. 35 mph versus 30 mph, etc.). In other words, the new regulation would only impact 7% of the newly manufactured trailers. Rather than following the Canadian example, perhaps NHTSA should take the lead by upping the standards to prevent PCI in a 36 mph or 37 mph or even higher speed collision. If preventing injuries to the nation’s citizens were of paramount concern, then the standard should be set higher— significantly higher.
8. **Comment from Mechanical Engineering Underride Design Group within Virginia Tech** As conveyed in UMTRI’s figure A-3 on page 89, SUTs without guards comprise 25% of the annual fatalities and 19% of PCI fatalities. Underride guards have two functions: 1) preventing PCI and 2) facilitating light vehicle safety

systems. Regulation in this spirit would translate into reducing this statistic.

9. **Comment from Seven Hills Engineering, LLC** The results from Transport Canada that showed minimally compliant FMVSS 223 guards failed at speeds (35mph) equal to that which occupant protection was expected from the vehicles tested was published by SAE in 2000. The agency must ask itself why 15 years passed before this deficiency was addressed.

Now NHTSA Ignoring Offset Collisions: Unfortunately, the agency has chosen to categorize the 41% of fatal "offset" underride collisions as a "small" portion of the underride problem (Pg. 78431), and quote, "believes the performance of rear impact guards in the fleet in non-offset crashes should be enhanced before turning to the issue of improving the performance of guards in offset crashes" (Pg. 78432). If the TTMA information that 93% of trailers already comply with CMVSS 223 is correct (P 78420), no substantial real world "performance enhancement" is being achieved by simple adoption of CMVSS 223. Given that consideration of heavy truck and trailer safety enhancement - particularly in the area of underride - is at best a decennial endeavor by NHTSA the current NPRM should go further.

Rather weak justification for ignoring offset car/trailer underride accidents in the current NPRM is given in part because the guard damage is characterized as less severe in fatal accidents. First of all, a fatal collision is fatal collision - particularly, in this context, a fatality with underride and PCI. Therefore, I fail to see the extent of guard damage as a barometer of the relative importance of offset collision fatalities. Actually, very often only the horizontal bar is bent with little damage to the uprights. Minimal guard damage is an expected result in those instances and in fact points squarely at the problem: lack of adequate guard strength on the outside edges of trailers.

10. **Comment from Stephen Batzer & Bruce Enz** In those fatal crashes in which a passenger vehicle and a Class VIII vehicle collide, approximately 90% of the victims are in the passenger vehicle [see Traffic Safety Facts, any year]. A portion of this uneven fatality distribution is caused the weight mismatch between the two vehicles, but a significant portion is caused by the incompatibility of the trailer side rails with the passenger vehicle. That is, passenger vehicle impacts into unguarded trailer sides cause a substantial number of passenger vehicle deaths and injuries every year [Brumbelow, 2012]. The current NPRM does not discuss this side under-ride injury mechanism. As Mr. Brumbelow showed in detail, injuries and deaths from side underrides into heavy trucks and trailers are a significant public health issue. Notably, this injury mechanism has been underreported by the Fatality Analysis Reporting System (FARS), and by those who rely upon this database for their analyses. This under-reporting is surely one reason why this mechanism of injury has yet not been technologically addressed. Mr. Brumbelow estimated that in 2006-2008, 22 percent of all passenger vehicle occupants who died in crashes with large trucks were killed in side impacts, a magnitude of 1,600 passenger vehicle occupants killed over the three year period 2006-2008. Of course, there were serious and non-serious injury outcomes in addition to the fatalities. Brumbelow reported that side underride guards (SUGs) could have reduced injuries in three quarters of the side impact accidents in which passenger vehicles struck heavy trucks or trailers. In personal communication in February, 2016, Mr. Brumbelow indicated that precisely estimating the potential magnitude of lives saved and injuries prevented through equipping van trailers with SUGs is difficult due to the problems of under-reporting and coding within the FARS database. **Still, his 2012 analysis strongly suggests that trailer SUGs could potentially save over one hundred lives per year, along with preventing numerous injuries.** This prospective benefit is remarkable compared to the benefit of upgrading trailer rear impact guards. Consider text from the current NPRM, which states: "Based on information from the Truck Trailer Manufacturers Association (TTMA), NHTSA estimates that 93 percent of new trailers sold in the U.S. subject to FMVSS Nos. 223 and 224 are already designed to comply with CMVSS No. 223. The agency estimates that about one life and three serious injuries would be saved annually by

requiring all applicable trailers to be equipped with CMVSS No. 223 compliant guards. The undiscounted equivalent lives saved are 1.3 per year.” In light of the disproportionate magnitude of the potential benefit of SUGs when compared to the mandate of CMVSS 223 compliant RIGs, we encourage NHTSA to begin regulatory action to address the demonstrated hazard of trailers and trucks in which the side interaction surface exceeds 560 mm (22 inches)

11. **Comment of Stephen Owings, Road Safe America** Road Safe America strongly agrees with the recently submitted comment by the NTSB and its claim that hundreds of lives can be saved each year by this minimally expensive structural trailer improvement.
12. **Comment from Neil Arason** I believe the NHTSA has overestimated the costs and underestimated the benefits of such changes. More importantly, however, we must modernize the very way we think about road safety in the United States and Canada. We need to make the default design for every car, truck and bus to be one that simply minimizes all levels of human harm.

The use of a cost-benefit analysis for motor vehicle design and upgrades represents outdated thinking. The air, marine and rail industries have a much more forward approach when it comes to safety and more often works to ensure that these modes are safe for all persons. We must do the same with motor vehicles as the use of cost-benefit analysis involves assigning a monetary value to a human life and it is unethical and crass to do that.

13. **Comment of The National Transportation Safety Board** Although some exclusions are necessary due to design issues, the NTSB is concerned about NHTSA’s decision to continue excluding some large truck trailers from FMVSS No. 224. NHTSA’s decision was partly based on an analysis of supplemental data on rear geometry of trailers that the University of Michigan Transportation Research Institute (UMTRI) collected as part of the 2008 and 2009 Trucks Involved in Fatal Accidents (TIFA) survey, which showed that excluded trailers only represent 4 percent of fatal light vehicle crashes into the rear of trailers with PCI.5 Further, based on additional analysis of the 2009 TIFA data, NHTSA determined that the presence of a CMVSS compliant rear impact guard would not have prevented the fatalities in the majority of these fatal light vehicle crashes. However, the NTSB believes NHTSA should evaluate injury, hospitalization, and fatality data when making decisions about which vehicles to exclude from FMVSS No. 224. Additionally, the exclusion of SUTs from FMVSS No. 224 has been a consistent NTSB concern. In its 2013 safety study, *Crashes Involving Single-Unit Trucks that Resulted in Injuries and Deaths*, **the NTSB found that the adverse effects of SUT crashes have been underestimated in the past because these trucks are frequently misclassified and thus undercounted in federal and state databases (about 20 percent in the case of fatalities).**⁶ There are substantial societal impacts resulting from SUT crashes, including deaths, non-fatal injuries, hospitalizations, and hospital costs. As a result of this 2013 safety study, the NTSB issued the following recommendations to NHTSA:⁷
14. **Comment from Andy Young** Unfortunately, underride truck crash data and statistics are not easily researched through a review of police reports alone. The available police report data lacks uniformity on this issue. Numerous underride studies have been performed attempting to decipher the inconsistent available underride crash data from the following resources: Fatality Analysis Reporting System (FARS); Trucks Involved in Fatal Accidents (TIFA); National Automotive Sampling System Crashworthiness Data System (NASS-CDS); and, the Large Truck Crash Causation Study (LTCCS). As requested by the NTSB, the Model Minimum Uniform Crash Criteria should bring about better crash reporting consistency to allow for more accurate statistics for fatalities and injuries caused by underride truck crashes. My personal review of police reports has also found inconsistent, often inaccurate, reporting on whether the subject crash involved passenger compartment intrusion or whether the occupants’ injuries or deaths were caused by an underride collision. Although data on this topic remains inconsistent, each registered commercial trailer represents a potential threat of an underride crash against

which preventative measures can – and should – be taken. Earlier this month, Transport Topics reported that “[n]ew trailer orders in the United States reached 315,000, the second-highest annual total” and that orders were down in comparison to “2014’s record total” of more than 356,000. These new commercial trailers will be added to the 5 11.7 million existing registered commercial trailers currently in existence as reported by the Federal Highway Administration in 2012. Combining all new trailer orders with the currently 6 registered commercial trailers puts the total number of commercial trailers in the United States at well over 12 million.⁷

15. **Comment from Andy Young** The Petitioners and the NTSB have outlined numerous items that are not being addressed in this NPRM. The NHTSA should harken back to 2005 when it challenged original equipment manufacturers of commercial motor vehicles to “Reduce Stopping Distances” from 60 mph to 0 mph within 250 feet. Today, the NHTSA seems to be just “going with the flow” with this NPRM. The NHTSA is not taking meaningful control of the underride problem. It is just reacting to what the industry and other nations are already doing. When the NHTSA “floats down the river,” its path is not under its own control. The NHTSA then takes direction from other nations, the industry, and hoped for more accurate statistics regarding underride truck losses. The NHTSA also has little motivation to do more because the NHTSA is making progress without any extra effort.¹⁸

The NHTSA should not wait near a decade to follow the lead of Canada or any other nation in protecting its citizens from the horrors of passenger compartment intrusion. Moreover, the NHTSA should not wait 62 years to pass an enhanced rear impact guard mandate for Single Unit Trucks (See NHTSA Docket No. 2015-0070).

What the taxpaying American Public deserves is for the NHTSA to “blaze the trail” into the future, by taking action to get ahead of the research, development, debate and proactive initiatives to prevent underride truck collisions.

By “blazing the trail” the NHTSA sets the course and is the thought-leader on underride truck crash prevention. The NHTSA can then work toward any direction it thinks will get to the destination of saving lives quickest.

The ultimate goal or destination is to:

- prevent underride truck crashes resulting in passenger compartment intrusion;
- allow car safety engineering (crumple zones, air bags, seatbelts, etc.) to work;
- protect truck drivers from the potential of a vehicular homicide charge;
- protect truck companies from filing for bankruptcy due to an underride truck crash verdict that exceeds insurance minimums;
- protect brokers, shippers, receivers, and others from being brought into lawsuits when not enough insurance is available to compensate victims of an underride truck crash;
- challenge original equipment manufacturers to make a safer product;
- mandate better protection when the technology seemingly already exists; and
- last but not least - SAVE LIVES.

Please allow this comment to serve as a plea, that the NHTSA be more proactive and less reactive on the underride crash epidemic. Too many lives are lost and too many hearts are broken. The memory of the victims of underride truck crashes should be at the forefront of NHTSA’s “trail blazing” initiatives going forward into the future.

16. Jerry Karth, **Comment of Truck Underride Roundtable and Supplemental Information 9**. The Cost/Benefit Analysis (CBA) used in this rulemaking is faulty as clearly demonstrated by some of the manufacturers’ willingness to step up and provide a better underride guard even without regulation. (Truck Safety Marketplace) Regarding the Cost/Benefit Analysis, I question the calculations as being overly stated for the Cost side as demonstrated by the estimated fuel costs in Table 26, Undiscounted Value of Lifetime Fuel Economy Impact Per Vehicle in 2013 Dollars, pp. 57-58. These figures indicate an ever-increasing cost of fuel, whereas the cost of fuel has actually been decreasing (see attachment).

Regarding the Cost Effectiveness Analysis, I question the accuracy of the conclusions. I do not find any of the variables concerning what a parent would pay to protect their children included in the calculation. Also, this equation seems to be missing the entire impact upon a family if a "bread-winner" is injured or lost in a crash, which could place the family into poverty. Also, does it include the medical expenses to care for a severely injured individual paraplegic or quadriplegic?

In the past, it has been concluded that a stronger override rule was not cost-effective. Thus, I am requesting that the Institute of Medicine (IOM) assemble a panel of specialists in Cost-Effectiveness Analysis & Bioethics to evaluate the advantages and disadvantages of different measures of effectiveness in order to determine whether the override rule, which is intended to prevent people, in passenger vehicles, from riding under a truck and consequently being severely injured or killed, has been appropriately analyzed especially because technology exists that can, in fact, prevent this horrific tragedy. The kind of tragedy which ended the lives of AnnaLeah and Mary.

17. **Comment from Marianne Karth** The fact of the matter is that it is technologically possible to design, manufacture, and test for better override protection than the proposed rule requires-- including rear, side, and front, with the inclusion of Single Unit Trucks, retrofitting, and at higher speeds as well.

With that in mind, I would request that NHTSA fully consider research which proves that this is the case. Specifically, please review the Australian/New Zealand proposed override rule; a link to this is found in the Override Research attachment. This rule would save more lives than the proposed adoption of the current Canadian override standard.

In addition, please also take into consideration the conventional wisdom offered by other override research which is likewise listed in the attachment. All of this research points to the possibility of a stronger more effective override rule.

In conclusion, please reassess the cost/benefit analysis methods and assumptions used by NHTSA to draw the conclusions about cost-effectiveness in the proposed rule. Pay heed to the numerous Public Comments submitted by various individuals and organizations regarding this aspect of the rulemaking process, as well as the references to the cost-effectiveness methods, required by OMB Circular A-4 and referred to in our Vision Zero Petition Book (see attached pdf).

After witnessing the communication which took place at the Override Roundtable, I am hopeful that truth will prevail and safety will truly be a priority. Customers have shown that they are willing to pay for their trucks to be safer. Manufacturers have proven that they are willing to respond to the market and produce safer trailers. Engineering students have demonstrated that they could think outside of the box and creatively solve a deadly problem within a short period of time.

Yet, I am not so naive as to think that this rulemaking will move forward smoothly, with no resistance, to higher levels of safety including the ability to withstand collisions at higher speeds. Therefore, I ask you to keep in mind that we are discussing matters which have the potential to save untold numbers of people from being dealt a sentence of Death by Preventable Override.

Don't take your role lightly in this matter. After all, if you deem that technologically-feasible countermeasures are "not cost-effective" and do not require them, then whom should we hold responsible for the preventable override deaths which will inevitably occur as a result?

18. **Comment from Marianne Karth** Participation in a Successful Side Guard Crash Test, March 12, 2016
19. **Comment from Kayla Woods** I support a high speed standard such as recommendations from MUARC in Australia would present, at least 40 mph for majority of fatal crashes. We demand at a minimum compliance with Vision Zero which your current recommendations violate thru lack of any effort to save lives as first priority. Guards must be energy absorbing (Energy absorption: 50kJ minimum) for future car designs and must be low to the road 16 inches for future car designs.

Angled struts must be attached to strengthen ends of guard for offset impacts and must be required to upgrade older guards. If these minimums are not met and the standard only legalizes guards "already on the road" then we demand an end to this rulemaking, immediate withdrawal.

20. **Wabash National Corporation, Comment from Erin Roth** Wabash has made significant investments in the project, conducted extensive finite element analyses, and built and tested (static and crash tests) numerous iterations of a potential new RIG design. As a result of these efforts, Wabash has developed an integrated RIG design ready for commercial use. The company has partnered with a leading truckload carrier to begin a limited production ramp up. Following this ramp up period, Wabash anticipates offering customers an optional rear impact guard with stable centerline and improved offset performance when tested within the scope of current FMVSS, CMVSS and IIHS testing regimes. This innovative RIG – which will be known as RIG-16 – is shown below in Figure 1.

RIG-16 includes an integrated bolt-on feature, designed specifically and only for use with Wabash van trailers. It consists of four vertical bumper legs with inside gussets, highstrength steel material and a 96" bumper tube. The RIG-16 provides greater energy absorption – especially in offset crash scenarios – than the company's standard RIG, which is designed to meet the Canadian standard. However, RIG-16 also weighs about 60 pounds more and costs approximately \$350 more, including federal excise tax, than the current standard RIG.

Wabash's innovative RIG-16 has been designed specifically for use with Wabash trailers, and is not interchangeable with trailers built by other manufacturers. With the production of additional components and significant modification to previously manufactured Wabash van trailers, the RIG-16 could be utilized to retrofit certain existing Wabash trailers. Given the complexity involved with making such an offering, however, the company will not initially offer the RIG-16 for sale for this purpose. Wabash further recognizes that trailer design continues to evolve in response to both market and regulatory demands for enhanced aerodynamics and the associated improvements in fuel efficiencies, and that the current greenhouse gas regulatory proposals advocate against added weight to trailers. While Wabash believes it appropriate to make its technological innovation available to the marketplace, the company also believes the agency's analysis with regard to the limited safety need is robust and accurate. Wabash, therefore, supports the agency's proposal to incorporate into the FMVSS a modified version of the current Canadian rear impact guard standards.

NHTSA's rear impact guard standards, FMVSS 223 (equipment) and 224 (vehicle), are part of the agency's comprehensive occupant protection program. As early as 1953, the federal government required certain heavy vehicles to be equipped with a rear-end device to help prevent underride. The original regulation provided for requisite ground clearance and location, and otherwise stated that guards "shall be substantially constructed and firmly attached."¹ After many years of consideration, NHTSA promulgated a final rule in 1996 (amended in response to petitions for reconsideration in 1998) to specify performance requirements applicable to rear impact guards and to mandate their installation on certain vehicles.

NHTSA's regulatory structure was designed to account for the fact that many trailer makers are small businesses unable to engage in extensive research and development or destructive testing. The performance requirements of FMVSS 223 are measured through quasi-static tests measuring the strength and energy absorption capabilities of the equipment. RIGs passing these requirements may be labeled as compliant with FMVSS 223 and, when accompanied with necessary attachment hardware and mounting instructions, vehicle manufacturers may install the RIGs and certify compliance with FMVSS 224.

In deciding upon the performance requirements, the agency balanced between strength, energy absorption, and Passenger Compartment Intrusion (PCI). Too much strength can lead to injuries from the crash itself; too much energy absorption can lead to excessive PCI. The agency's consideration during the 1990s noted that the factors tended to balance each other out for larger vehicles – more vehicle weight may mean more underride, but a higher hood profile would result in better guard engagement and longer hoods would allow for more underride before PCI occurs. The agency noted in its initial rulemaking the difficulty of optimizing rear impact guards for all vehicles, but concluded that a minimally compliant guard would be able to protect passengers from PCI and excessive deceleration at speeds between 25 mph and 35 mph.⁴ As noted in the current NPRM,

FMVSS 223 was designed generally to protect occupants in compact and subcompact vehicles in impacts up to 30 mph.

Although, as the agency found, the majority of new trailers currently adhere to the Canadian standard, there is significant benefit to incorporating the proposed performance measures into requirements. Not only will doing so mandate that the remaining portion of the new trailer fleet be able to protect passengers in higher speed collisions, but also the agency will be entitled to take enforcement action against any companies that fail to install RIGs in conformance with the upgraded requirements. The agency properly analyzed the suggestion to attempt to cover offset crashes by mandating a design-based RIG standard (i.e. the “Manac guard”) that moved the target points to more outboard positions. While the IIHS deemed the Manac guard to be successful in the specific IIHS testing completed, that guard is designed only for a Manac trailer and, more significantly, would allow a sub-compact vehicle to be unprotected in a centerline test. This point is illustrated in Figure 2 below.

As Figure 2 illustrates, moving the test points outboard, although taking into account potential offset collisions, would reduce protection in centerline crashes in some compact and sub-compact vehicles. And, as the agency found, the majority of crashes are centerline. With the significant number of compact and sub-compact vehicles in operation in both Canada and the United States, the need for protection in centerline crashes cannot be ignored in favor of covering off-set crash scenarios.

Wabash has engineered a RIG design that retains full performance – as measured in the current testing regime – and adds protection in varying degrees of an offset crash. Through a series of design iterations and multiple rigorous static and crash tests over a span of more than two years, the company was able to design a rear impact guard providing protection in the 100%, 50% and 30% overlap positions at 35 mph.

Designing and engineering the enhanced RIG involved substantial trial and error to find the appropriate balance between strength and deflection to avoid PCI in all crash modes. The placement and design of the verticals, the height of the RIG, attachment of the RIG to the trailer, continued functionality with dock-locks and dock construction (to avoid incompatibility with warehouse and shipping infrastructure in place across North America), and the design and composition of the horizontal member were all factors in developing a RIG capable of meeting the design criteria and passing all current FMVSS test requirements.

The Wabash RIG is designed specifically for use with Wabash trailers. Beginning in 2016, Wabash is offering the RIG-16 as a factory-installed integrated option on new trailers. The RIG-16 is also available through authorized Wabash dealers as replacement equipment for the same. The RIG-16, however, is not intended for use with other manufacturers’ trailers and, if attempted, it would be difficult to attach the RIG-16 to trailers other than those built by Wabash. Likewise, given the complexity involved with retrofitting previously manufactured Wabash trailers, the RIG-16 also will not be offered for sale for retrofitting initially.

As noted above, accompanying the RIG-16 is a significant weight penalty and a cost that may be prohibitive industry wide. The cost estimates in the NPRM are consistent with Wabash’s estimates. With approximately 60 pounds of additional weight, even with advanced aerodynamic features and lightweight materials, choosing the RIG-16 may present challenges for customers also aiming for reduced greenhouse gas emissions and improved fuel economy.

The combined experience of the IIHS test and Wabash’s development project illustrate that a rear impact guard’s ability to balance appropriately strength, deflection and PCI in 100%, 50% and 30% overlap crash tests is heavily dependent on trailer design. The height of the bumper tube from the ground, for example, affects how the guard engages the frame and engine block. Failing to engage the frame and engine block in a crash can increase the potential to push the front of the car downward. The placement of the verticals impacts how the trailer interacts with dock-locks and the ongoing utility of the trailer – in addition to impacting the likelihood of always engaging even the smallest vehicle in various crash scenarios. Reaching the appropriate balance – at least in the short term – would take time and investment by each trailer manufacturer.

As a leader in innovative safety technology, Wabash endorses the agency’s proposal to upgrade FMVSS 223 and 224 to mandate RIGs capable of performing to rigorous standards at speeds up to 35 mph. While Wabash has long installed RIGs capable of such performance, the overall vehicle fleet will benefit from ensuring that all trailers to which the regulation applies are equipped with such

RIGs.

As the agency's analysis shows, the current trailer and light-duty fleet performs well in collisions between light-duty vehicles and the rear of trailers. There are likely to be yet fewer accidents in the future as automatic emergency braking and other crash avoidance technologies proliferate through the light-duty vehicle fleet. For its part, aerodynamic and lightweight innovations are likely to continue in the trailer market as fuel efficiency and greenhouse gas demands continue. The agency has struck an appropriate balance between advancing motor vehicle safety and ensuring that the upgrade to FMVSS 223 and 224 remains practicable and objective.

21. **Comment from Jade Hadley**

Comments submitted in honor and loving memory of Tamara Lynn Mills-Hadley my beloved mother. Died in crash at 35 mph and extreme offset. My young mother was a passenger which underrode an illegally parked semi-truck.

I support a high speed standard such as recommendations from MUARC in Australia would present, at least 40 mph (64 km/h) for majority of fatal crashes. We demand at a minimum compliance with Vision Zero which your current recommendations violate thru lack of any effort to save lives as first priority. Guards must be energy absorbing (Energy absorption: 50kJ minimum) for future car designs and must be low to the road 16 inches (406 mm) for future car designs. Angled struts must be attached to strengthen ends of guard for offset impacts and must be required to upgrade older guards. If these minimums are not met and the standard only legalizes guards "already on the road" then we demand an end to this rulemaking, immediate withdrawal.

When we crash test guards at 30 to 35 mph (48 to 56 km/h) we get guards for 50 years that perform at 30 to 35 mph (48 to 56 km/h). When you try something over and over and over again and get a negative result, why would you continue this activity. If we crash test guards at high speeds perhaps we will see guards that perform at high speeds.

22. **Comment from The Association for the Work Truck Industry** NTEA represents over 1,700 companies that manufacture, distribute or use work-related trucks, truck bodies and equipment. While our core membership produces single-unit work (vocational) trucks, some NTEA member companies manufacture trailers and some produce equipment that could be mounted on specialized trailers. The NTEA's comments pertain to one application area of the proposed amendments to the regulation.

The NTEA requests that any regulation that results from this rulemaking not apply to end dump trailers, which are used for road paving. End-dump trailers are an integral part of road paving and highway construction in North America - supplying the majority of asphalt materials to job sites. Asphalt paving machines need to be able to interface with the trailer so asphalt can be dumped into the machine without spillage. This is not possible if rear bumpers or impact guards are in place. Such equipment would occupy space between the machine and the trailer. In order to operate, the rear tires of the trailer or truck must make contact and remain engaged with the paving machine during the asphalt flow process. Requiring a rear impact guard on these trailers would render them inoperable.

The Canadian version of this regulation, upon which NHTSA is largely basing this proposal, CMVSS No. 223 recognizes this problem in section (2)(c), which provides an exemption for "a trailer designed to interact with, or having, work-performing equipment located in or moving through the area that would be occupied by a horizontal member that meets the configuration requirements of subsections (6) to (8)." FMVSS No. 224 contains a similar exemption to the Canadian exemption, but breaks it into two parts.

Trailers that have work performing equipment are classified as "special purpose vehicles." Trailers that interact with paving equipment are classified as "road construction controlled horizontal discharge trailers." However, due to the current definition of "road construction controlled horizontal discharge trailers," enddump trailers are not excluded, yet perform road construction paving. The NTEA would support changing the language of the proposed

rulemaking to widen the definition of “road construction controlled horizontal discharge trailer” to include end-dump trailers such that end-dump trailers used for road construction would also be exempt from FMVSS No. 224.

23. **Comment from Randy Gates** I support a high speed standard such as recommendations from MUARC in Australia would present, at least 40 mph (64 km/h) for majority of fatal crashes. We demand at a minimum compliance with Vision Zero which your current recommendations violate thru lack of any effort to save lives as first priority. Guards must be energy absorbing (Energy absorption: 50kJ minimum) for future car designs and must be low to the road 16 inches (406 mm) for future car designs. Angled struts must be attached to strengthen ends of guard for offset impacts and must be required to upgrade older guards. If these minimums are not met and the standard only legalizes guards "already on the road" then we demand an end to this rulemaking, immediate withdrawal.

When we crash test guards at 30 to 35 mph (48 to 56 km/h) we get guards for 50 years that perform at 30 to 35 mph (48 to 56 km/h). When you try something over and over and over again and get a negative result, why would you continue this activity? If we crash test guards at high speeds perhaps we will see guards that perform at high speeds. The FHWA tests crash attenuators in 62.2 mph (100 km/h) crash tests (Real World Crash Speeds) and attenuators protect cars and trucks in crashes at 62.2 mph (100 km/h) and more!

RECOMMENDATIONS I support from MUARC

1. Barrier test Forces:

P1 (outer edge) P2 (off centre) P3 (centre)

200 kN 200 kN 100 kN

2. Barrier height: 400mm

3. Barrier width: Within 100mm of the outer frame of the rear of the truck

4. Energy absorption: 50kJ minimum

24. **Comment from American Trucking Association** ATA supports the proposal to strengthen new trailer rear impact guards. We also support the requirement that new trailers must have rear impact guards that provide sufficient strength and energy absorption to protect occupants of compact and subcompact passenger cars impacting the rear of trailers at 35 miles per hour. ATA also supports the NHTSA position taken in this NPRM that retrofitting trailers made before the implementation date of the rule will have a negative cost benefit ratio and could be a very expensive proposition. There were more than 11.7 million commercial trailers registered in the states in 2012, many of which are not used on a regular basis and retrofitting would create a cost without any corresponding benefit. ATA strongly believes that preventing rear-end crashes is a far better strategic goal than mitigating them and strongly recommends that all vehicles (light and heavy) be equipped with forward collision warning and mitigation braking technology. Thank you for helping to keep our highways and vehicles safe.
25. **Comment from Theo Allen** The NHTSA should act to standardize the requirements of guardrails on all edges for trucks and SUV's.

By preempting State and Local Laws to the contrary, this would ensure that uniformity would prevail on trucks. The requirement in some cities that trucks have guardrails for pedestrians, but not in others, unconstitutionally discriminates against those companies based in States which do not impose such requirements.

Safety must be priority #1. For these reasons, and the impact on safety, I support this rule.

26. **Comment from Brian Vires** Comments submitted in honor and loving memory of my beloved Grandmother Tamara Lynn Mills-Hadley

Died in crash with illegally parked truck at 35 mph and extreme offset. Low speed Clinton underride guard that has killed so many for a few campaign donations from the car companies. See attachments:

No. 1: NHTSA Mad Gods Letter in PDF

No. 2: NHTSA Rear Guard NPRM Comments Guide Underride Network

27. **Comment John Freiler - Truck Trailer Manufacturers Association** {Note: See full attachment at link as formatting was difficult to copy and paste. Mwk }
28. **Underride Network - Mad Gods** The Underride Network supports a high speed standard such as recommendations from MUARC in Australia would present, at least 40 mph for majority of fatal crashes. We demand at a minimum compliance with Vision Zero. Guards must be energy absorbing (Energy absorption: 50kJ minimum) for future car designs and must be low to the road 16 inches for future car designs. Angled struts must be attached to strengthen ends of guard for offset impacts and must be required to upgrade older guards. If these minimums are not meant and standard only legalizes guards already on the road then we demand an end to this rulemaking, immediate withdrawal.
29. **Comment from Aaron Kiefer** Please find a Powerpoint presentation illustrating my comments on this matter. I'm aware of the safety hazard created by semitrailers and box trucks through my work as an accident reconstructionist. In response, I've developed a side and rear guard system that can be retrofitted to dry van trailers and box trucks. Box trucks and trailers in North America are not required to be guarded on the sides and there are catastrophic consequences even at relatively low collision speeds. New trucks and trailers need to be sufficiently regulated and existing trucks and trailers should be retrofitted to prevent side and rear underride collisions. Lives will be saved.
30. **Comments of Recreation Vehicle Industry Association, Inc** During the course of reviewing the NPRM and verifying that RVs remained excluded from FMVSS 223 and 224, RVIA followed up on the reference to "temporary living quarters as defined in 49 CFR 529.2." It was then discovered that this reference in the currently existing CFR section is incorrect. 49 CFR 529.2 is the applicability section for provisions addressing manufacturers of multistage automobiles and does not contain any reference to or definition of temporary living quarters. It appears that the proper reference should be to 49 CFR 523.2. This is the definitions portion of the Part that addresses vehicle classifications and does include a definition of "temporary living quarters." Therefore, in the interest of correcting an erroneous reference to prevent future confusion, RVIA respectfully requests that NHTSA make the correction as stated herein during the rulemaking process addressed by this NPRM.
31. **Strick Trailers, Comment from Jan Hoover** Strick Trailers, LLC (Strick) is a member of the Truck Trailer Manufacturers Association (TTMA). TTMA has commented on the NPRM for Rear Impact Guards, Docket No. NHTSA-2015-0118. Strick fully supports and agrees with TTMA's comments.

In addition, Strick agrees with the Rear Impact Guard proposal. We feel harmonizing with the Canadian safety standards will simplify compliance as a whole.

Regarding comments to specific issues, Strick would like to make an additional comment to TTMA's comment on the testing of half guards on page 78424. Strick feels that the testing of half guards, done properly, will give the same results as the testing of a full guard. We have seen a benefit from being able to test a half guard. If one half is tested and the performance requirements are not met or can be enhanced, we can tweak the design of the second half, and then test the second half with less time and effort. That is, we can increase our cycle time with reduced material and labor costs. We believe that this flexibility is a benefit and should be included in the final rule.

Comments posted in response to the ANPRM for Single Unit Trucks **ANPRM Underride Protection of Single Unit Trucks**

1. **T. W. Blasingame Company, Inc. - Comment** In view of the number of reported fatalities for straight trucks cited in the Trailer-Body Builders Magazine article (August 2015) of 1080, this number appears to be very low compared to the numbers of straight trucks in operation. While we agree that zero fatalities is desirable, adding the proposed underride protection to all medium and heavy duty trucks to save five or six lives annually at a nominal cost of from "\$106.7 million to \$164.7 million for each life saved" would seem not to be feasible or cost-effective.
2. **National Ready Mixed Concrete Association (NRMCA) - Comment** [MWK: MORE RESEARCH NEEDED is a delay tactic which is unacceptable due to the decades of years available for this and the already-existing but ignored research.] Furthermore, NRMCA and TMMB question why NHTSA didn't do any analysis to determine how current Federal motor vehicle safety standards (FMVSS) compliant rear underride guards (FMVSS Nos. 223 and 224) might impact rear underride crashes on SUTs. NRMCA and TMMB disagree with NHTSA's implied presumption that CMVSS compliant guards are the only method for reducing fatalities and injuries on our nation's roadways concerning rear underride crashes. It is entirely conceivable that given the nature of SUTs, FMVSS compliant guards or other technology could achieve a similar or greater estimated level of safety on our nation's roadways with lower costs and/or weights, as compared to CMVSS compliant guards. NRMCA and TMMB believe NHTSA has prematurely issued this advanced notice of proposed rulemaking due to the outstanding cost and benefit questions outlined above. As well, both groups believe more research is needed to comprehensively determine the methods available to SUTs to truly prevent rear underride crashes.
3. **AAA - Comment**
4. **Anonymous**
5. **Association of Pedestrian and Bicycle Professionals, Kit Keller**
6. **Cyclist, Ariel Horowitz - Comment**
7. **Bob Schafer - Comment**
8. **Grady Jung, Candidate for law school - Comment** Executive Order 12,866, 58 Fed. Reg. 51735 directs agencies to consider a broad range of qualitative and quantitative benefits and costs, including environmental costs. OIRA reviews all significant regulatory actions. The NPRM concedes that this is a significant action, having an effect on the economy of \$100 or more, as the minimum cost is estimated at \$421 million. Failure to consider environmental cost would lead OIRA to return the rule for reconsideration. The proposed rule will result in an additional consumption of 25.9 million gallons of diesel per year, a substantial cost to the environment. As noted in Appendix A of the proposed rulemaking, SUTs average fuel consumption without a rear guard is 7.3 mpg, which decreases approximately .11 to .04 miles per gallon with the heavier guard attached. Even a conservative estimate projects substantial additional fuel consumption. Using the estimate that 41 percent of SUTs will require a new guard, the conservative .04 percent increase in fuel consumption, and an average of 13,239 miles per year per SUT, means an additional 25.9 million gallons of fuel will be used every year. Additional fuel consumption results in increased pollution as well as demand on the diesel fuel market. Increased demand could lead to increased costs for consumers as well as environmental harm from increased oil production. These costs should be considered.
9. **National Transportation Safety Board (NTSB) - Comment** In the 2013 Safety Study, the NTSB also found that the adverse safety effects of crashes into the rear of SUTs have been underestimated because these trucks are frequently misclassified and thus undercounted in federal and state databases. The ANPRM derived annual estimates for cost and benefit

calculations by using the Trucks in Fatal Accidents (TIFA) data from 2008–2009.⁴ The NTSB found that the adverse effects of SUT crashes have been underestimated because these trucks are frequently misclassified, which translated into a 19 percent undercount of SUTs involved in fatal crashes and a 20 percent undercount of fatalities. For example, the NTSB 2013 study used databases such as TIFA and the Fatality Analysis Reporting System (FARS) for fatal crashes; the National Automotive Sampling System (NASS)/General Estimates System (GES) for national estimates of nonfatal injuries; and the Large Truck Crash Causation Study (LTCCS) for truck crash investigations with details not available from the other sources. Looking at a longer period, from 2005–2009, the NTSB study found that 9,084 people were fatally injured in SUT crashes. Many others also received nonfatal injuries in SUT crashes—at least 142,000 during 2005–2009. The NTSB also used the Crash Outcome Data Evaluation System (CODES), which links hospital discharge records with police accident reports.⁵ Of the 52,051 SUTs identified by VINs, 47 percent were incorrectly coded as passenger vehicles by the vehicle body type variable, and 4 percent were incorrectly coded as tractor-trailers. The overall effect of misclassifications in the CODES state databases was a 23 percent undercount of SUTs involved in police-reported accidents, which is similar to the 19 percent undercount observed for fatal crashes. The understanding of truck safety is reliant on accurate data and databases. The NTSB remains concerned that the data NHTSA used in the ANPRM undercounted both SUT fatalities and rear underrides. That is, more occupants of passenger vehicles are at risk due to this type of crash than reflected in the NHTSA cost and benefit calculations. To provide the most accurate safety benefit analysis, the NTSB strongly urges NHTSA to fully use all information derived from VINs to identify SUTs.

10. **Anonymous** [trucker?]

11. **Lisa Bixby - Comment** [Stanford Law School] Here, NHTSA has considered the relevant factors in proposing the retroreflectivity requirement, and given the cost-effectiveness of the requirement, the risk of accident resulting from its absence on SUTs can be characterized as “unreasonable.” While cost effectiveness is *not* necessarily required under the Act (though costs must be weighed against the benefits), NHTSA’s analysis shows that this requirement would be highly cost-effective. Using “relevant available motor vehicle safety information,” that is, the data from retroreflectivity use on heavy trailers (which, while not perfectly analogous to SUTs, is the most “relevant available” data), NHTSA determined that 14 lives per year could potentially be saved at a cost of \$2.1M per fatality prevented, as compared to the DOT’s VSL of \$9.2M. Further, given that the NTSB estimates that SUT-involved fatalities are undercounted by 20%, it is likely that this rule would be even more cost-effective than the ANPRM states.

12. **Anonymous**

13. **American Trucking Associations, Inc - Comment** Some of ATA’s (those that have SUTs in their fleets) have suggested that the estimated cost of installing rear impact guards that meet the Commercial Motor Vehicle Safety Standard (CMVSS) on new vehicles is too low, quoting a price range from \$1,500 to \$1,800 per vehicle, plus the cost of labor, approximately six hours per vehicle rather than the \$307 to \$453 range for materials and labor used in Table 3 of the ANPRM. Our members also suggest that their costs for reflective tape are higher than the \$51.91 per vehicle as shown in Table 4 of the ANPRM. Tape rolls range from \$130 to \$260 per roll depending on the quality of the tape; the higher the quality, the longer the tape lasts before replacement is needed. To illustrate, each 24-foot long SUT uses approximately 4 rolls and 4 decals at an average cost of \$133.63 per truck. Each truck is likely to need partial replacement of tape on the truck sides once a year at a cost of \$128 per truck. It takes approximately 6 to 8 minutes of preparation time scraping old tape off and preparing the surface for new tape. Labor for placing new tape is about 1.4 hours at \$118 per hour. Annual maintenance with 50% attrition on side rails and 96 minutes of labor is near \$250 per vehicle per year.

14. **Michelle Swanson - Comment** [pedestrian/cyclist]
15. **The Association for the Work Truck Industry - Comment** NHTSA has preliminarily examined the cost and benefits of requiring new single unit trucks with a GVWR greater than 10,000 lb. to have and maintain conspicuity tape on the sides, rear, and upper corners of the vehicles. NHTSA estimates tape cost at \$0.61 per linear foot. They estimate that it would take 30 minutes to apply at an hourly rate of \$22.20. This yields labor costs of \$11.10 (for 30 minutes labor) to apply tape to 50 percent of the length of the sides and the entire rear width and upper rear corners of an average single unit truck. Applying a 1.51 markup rate for cost to consumer, NHTSA estimates their proposal would cost \$51.91 per vehicle. The NTEA does not agree with the Agency's cost analysis. The NTEA believes that both the labor rate and time estimates are incorrect. In a 2009 study quoted by the Agency for this ANPRM (pg. 43689) it is claimed that the "average maintenance and repair expense" of a rear impact guard over the life of a vehicle would be \$15.00. We believe this to be incorrect. When guards are damaged/deformed, such as the frequent, permanent deformation seen when trailers back into a delivery bay, how are the energy absorbing performance requirements maintained? These rear underride devices are an engineered system. If a guard is simply 'bent back into shape' the integrity of the guard is unlikely to be maintained. As a result, simple repair is not an option if full effectiveness is to be restored. Replacement is the safest option. Similarly, installation of a rear underride guard as envisioned in the ANPRM on a SUT would be, on the whole, significantly more complicated and expensive than perhaps referenced in the ANPRM, and in comparison to trailers. Often, trailer manufacturers are able to engineer, test and certify their own rear underride guards – and more importantly, the attachment points. In the case of SUT's, final stage manufacturers (FSM) would predominantly buy off-the-shelf guards from various sources. The FSM would then fashion suitable attachments to the variety of truck chassis/bodies in order to comply with the dimensional requirements for positioning the guard with regard to the rear extremity of the vehicle. As such, the bracketry/custom components needed to position the guard become part of the load path needed for compliance with the guard system's energy absorbing performance.
16. **New York City Department of Transportation - Comment** Following a national side guard mandate, the U.K. experienced a 61 percent reduction in bicyclist fatalities. In addition, 20 percent fewer pedestrian fatalities were reported in side impact collisions with trucks.
17. **Johnson - Comment** [straight trucks with lift gates]
18. **General Motors, LLC - Comments** The stated goal of the ANPRM discussion is to reduce passenger compartment intrusion (PCI) when a smaller vehicle crashes into the rear of a larger truck. We believe that NHTSA did not intend to include full size trucks and cutaway van models that are over the 10,000 lb. GVWR threshold. GM has participated in the preparation of the Alliance of Automobile Manufacturers (Alliance) response and fully supports it but we would like to draw your attention to additional GM models that are also affected by the proposed rule that should be excluded but are not discussed by the Alliance. Our incomplete chassis- cab and cutaway vans that are over 10,000 lbs. GVWR completed as trucks would fall under the definition of an SUT. These vehicles are built using a perimeter frame that is formed around the rear axle rather than a straight ladder type frame. Chassis-cab vehicles are usually completed by adding a bucket lift, dump body, or other equipment and classified as a truck. A typical cutaway van is completed as a "cube van" used to haul cargo and also used in rental fleets such as U-Haul for do-it-yourself movers. Although these vehicles are sold incomplete and it would be the final stage manufacturer's responsibility to install underride guards, we work closely with our customers to assist with FMVSS compliance whenever it is practical.
19. **Pennsylvania Aggregates and Concrete Association (PACA) - Comment** PACA believes the NHTSA estimated costs run lower than what will be found in real life. NHTSA's estimate does not include the added lifetime fuel costs and, subsequently, actual cost increases will likely be

higher than the NHTSA estimates.

20. Erin Olivella - Comment

While the agency did calculate the increased fuel costs due to the additional weight of the guard, the agency did not calculate the increased costs from increased wear and tear on roads, bridges, and other public goods.

21. Philip Kreycik - Comment [urban planning and transportation student] Given that the volume of truck traffic in urban areas is only expected to increase in the coming decades, and given that these sideguards are such a cost-effective way of addressing preventable fatalities, I strongly urge NHTSA to assign the highest priority to this issue.

22. Alliance of Automobile Manufacturers - Comment The Alliance is concerned that the proposed definition for Single Unit Truck (SUT) is too broad and inappropriately includes unibody cargo vans (e.g., Mercedes-Benz Sprinter, Ford Transit) and full size pickups over 10,000 lbs GVWR. Unlike straight framed (stiff) medium duty commercial vehicles (box truck/stake body), these vehicles share dimensions and structural characteristics with their under 10,000 lbs GVWR counterparts utilizing unibody construction or perimeter frames that do not exhibit the adverse rear impact compatibility characteristics that the agency is addressing in this notice (see figure 1). We are not aware of any crash data indicating any significant rear or side impact crash incompatibility or lack of conspicuity concerns with these vehicles (both under and over the proposed SUT defined 10,000 lb GVWR applicability).

23. National Propane Gas Association - Comment NPGA encourages our members to drive safely and responsibly. In general, we support efforts of NHTSA and other government agencies to facilitate the development of safe and secure SUTs to mitigate injuries and fatalities from vehicular accidents. However, we disagree with the petitioners and the subsequent ANPRM that states the underride protection requirements for SUTs detailed by the Canada Motor Vehicle Safety Standards No. 223 (CMVSS) offers superior safety. 3 We argue that the limited benefits presented by the exorbitant costs of the requirements render the proposal unjustifiable as well as generally ineffectual. Research reviewed in the ANPRM indicates that CMVSS No. 223 offers only nominal improvements to a small number of SUTs involved in accidents. 4 Further, the slight safety improvements are questionable because the data available to NHTSA is narrowed by multiple ancillary factors.5 The research on injuries and fatalities involving SUTs consists of small sample sizes that are not appropriate foundations from which to draw national forecasts.6 The agency also recognizes that CMVSS No. 223 would not effectively improve safety for a substantial percentage of injuries or fatalities from incidents with SUTs because many occur at very low7 or high speeds,8 involve the failure of passengers to wear seat belts, or passengers who are particularly vulnerable.9 Therefore, CMVSS No. 223 could only benefit a fraction of the population when involved in only a fraction of incidents. We find it apparent from the various research studies reviewed by NHTSA that the small percentage of potential benefits from imposition of CMVSS No. 223 do not offset the substantial costs. Conservative estimates indicate that application of CMVSS No. 223 to SUTs totals \$421 million to \$669 million annually.10 Calculations also lead NHTSA to conclude in the ANPRM that the greatest degree of safety the underride protections could offer is not cost effective.11 We strongly advise NHTSA to reconsider proposing adoption of CMVSS No. 223 because of the apparent limited degree of potential safety improvements at high costs. We urge NHTSA to exclude SUTs with rear equipment such as lift gates from the scope of any future rulemaking related to underride protections. In general, we also discourage the agency from adoption of CMVSS No. 223. Review of the limited research available demonstrates that CMVSS No. 223 presents little safety benefits with questionable effectiveness and at great costs. We ask NHTSA to reconsider the imprudent costs application of CMVSS No. 223 would impose, particularly in regards to the exceptional redesign efforts for SUTs with rear equipment. The agency should also affirm that

any future actions taken would apply prospectively and not retroactively, particularly since no cost estimates were presented that addressed retroactivity. We appreciate NHTSA's consideration of our suggestions and concerns before additional steps are taken in review of the petition to adopt CMVSS No. 223.

24. **International Brotherhood of Teamsters - Comment** We see no reason to distinguish between different types of SUTs when it comes to requiring the application of conspicuity tape. These vehicles are all significantly heavier than automobiles and any collision between them and SUTs can potentially cause significant damage and bodily injury to the auto's occupants. The cost of the tape and its application is minimal, and the advantages in reducing crashes with vehicles displaying conspicuity tape are significant, as the NHTSA study has suggested. For consistency and easy recognition and reaction by the driving public, location, patterns and colors of conspicuity tape on SUTs should mirror the current heavy trailer applications. Over a third of crashes with SUTs in dark-not-lighted conditions were side impacts. To increase visibility and highway safety, conspicuity tape should be required on both the sides and rear of SUTs. This is consistent with the pattern used with heavy trailers. In addition, NHTSA should require current SUTs to be retrofitted with conspicuity tape. Retrofitting was required for heavy trailers. The cost of tape and installation is minimal especially compared to the decrease in crashes with vehicles fitted with retroreflective tape, the increase in highway safety and the potential for lives saved as a result of this future regulation.

25. 3M Traffic & Safety Security Division **Daniel J. Hickey - Comment** Specifically, considering nearly 62 percent (21 out of 34) of the fatalities in SUT accidents were rear impacts in dark-not-lighted conditions, it can be assumed that the safety benefits for these 21 rear-impact fatalities would be very similar for both heavy trailers and SUTs. Using the calculations provided by NHTSA to include the total cost to the consumer, the truck marked by 3M would equate to the following costs: • Material: $\$.61 \times 45 \text{ ft} = \27.45 • Labor ($\$22.20$ per hour): $\$22.20$ per hour with a 28.5 minute application time = $\$10.55$ • Consumer Markup ($1.51 \times$ total cost): $(\$27.45 + \$10.55) \times 1.51 = \$57.38$ per vehicle

Material cost per vehicle.....	\$27.45
Labor cost per vehicle	\$10.55
Consumer markup per vehicle	\$57.38

We consider the NHTSA estimated cost per vehicle marked at $\$51.91$ per vehicle to be a fair representation of the total cost per vehicle. Again, the bulk of the difference in the material used by 3M and the NHTSA estimate is that 3M marked the rear underride guard with an additional stripe of conspicuity tape. Fatality Analysis Reporting System (FARS) crash data suggests about 38 percent of the crashes with SUTs in dark-not-lighted conditions were side impacts. It is highly likely that the retroreflective tape, as discussed in our response to question #1, will greatly improve the visibility of the SUTs in such conditions from the side and help reduce side impact fatalities. But that also means that 64 percent of the crashes with SUTs in dark-not-lighted conditions were not side impacts and could have been rear impact. As such, it is highly important that both SUT sides and the rear should be considered for tape application, not only for safety benefits in reducing rear end and side impacts, but also for consistency with the pattern used in heavy trailers.

Yes, NHSTA should consider the current SUT fleet to also be considered for retrofit conspicuity tape application. Assuming that the expected life cycle of an SUT is twenty years, it would take nearly twenty years for the entire vehicle fleet to be fitted with retroreflective tape. This is notwithstanding the refurbishment of old tape discussion in our response to question #5. Society would realize immediate safety benefits and saved lives through retrofitting the existing fleet. We recommend that refurbishment be achieved by incorporating into the process of routine maintenance.

26. **Stephen Hadley/Override Network - Comment** First and most important point must be adopting as the U.S. claims a Vision Zero philosophy and method to promoting and regulating traffic safety. A complete denouncement of 30 years of ineffective guards and increased deaths due to cost benefit analysis to excuse industry's refusal to use guards or use of low speed cheap guards that were designed to fool the public into complacency while large numbers of deaths and injuries continued to occur.

We must move to the crash testing and rating system for cars that has drastically reduced fatality rates and increased customer demand for high end safety systems in their vehicles. If you are buying an high end expensive truck or trailer then you would demand the best in all categories including a five star rating in crash performance and eventually crash compatibility.

27. **Fire Apparatus Manufacturers' Association (FAMA) - Comment** Many emergency scenes are located off of public roadways or other improved surfaces. Ambulances and Fire Apparatus must have the ability to operate at times in off-road conditions. These may include construction sites, farm yards, parks, wildland areas, and other unimproved sites where the ground is uneven, rutted, muddy, and full of ground clearance hazards. All these conditions require excellent ground clearance and high departure angles. The extension of FMVSS 123 and 124 to emergency vehicles would detract from their capability as a life-saving tool in the hands of emergency responders
28. **Aaron J. Kiefer MSME, PE - Comments** dered as those occur at or below 35 mph closing speed: Higher closing speed rear end collisions (especially those with longer crash pulses and in vehicles with advanced airbags and seatbelts) may be survivable if PCI is avoided. In addition, current CVSS compliant guards may resist some 40+ mph impacts depending on the size, weight, and overlap of the striking vehicle. Additional lives could be saved if guards were to be strengthened to resist failure when struck at any reasonable overlap. If SUTs were to be regulated to CMVSS performance standards, it would make sense to include requirements to support the cantilevered extents of the guard horizontal (the weakest areas). This would eliminate the narrow overlap weakness illustrated in IIHS rear end testing and would reduce PCI. A fair number of the PCI collisions that my office evaluates have significant offset due to last second avoidance swerve maneuvers. In fact, I have designed patent pending devices that can be installed on semitrailers and box trucks with FMVSS 223/224 compliant guards to support the outside edges of existing guards. Currently, collision mitigation (auto-brake) technology has been shown to reduce extreme closing speed collisions to more moderate closing speeds. Accordingly, this rule making calculus should account for a downward trend in rear end collision relative velocity and the related increasing number of high relative velocity rear end collisions that may be survivable if PCI can be avoided. Table A-2 and A-3 (page 53 and 54) describe percentage populations of trucks that were involved in fatal rear end accidents with PCI. The population percentages by

category of these fatal-involved SUTs are not necessarily the same or similar to the category percentages of all SUTs on the road. In fact, it is reasonable that unguarded SUTs, or SUTs with exemptions that don't require a guard (but geometrically allow PCI), were involved in fatal collisions with PCI at a significantly higher rate than SUTs with stronger guards or geometries that do not allow PCI.

Applying CMVSS or similar standards would reduce the likelihood of PCI by regulating against the most dangerous SUTs (the vehicles most likely to cause PCI). Relying directly on a population percentage when evaluating benefits underestimates the potential lives saved. I'm not aware of a simple way given the data presented to analyze the actual benefit of regulation. Perhaps a 'risk modifier' could be applied to more accurately characterize the changes brought about by applying CMVSS 223 or similar.

Current Estimate: NHTSA: 30% < 35 mph, 85% efficiency
ANPRM: 59% require guards 33 fatalities x 30% x 85% x 59% = 5 lives saved

Under the CMVSS standards and definitions, the percentage of vehicles that could create PCI in moderate delta-v rear end collisions would be reduced. In fact, it may be reasonable to conclude that CMVSS guarded vehicles and CMVSS defined wheels back and/or low chassis vehicles would not cause PCI except in very rare cases. The percentage could then be 79% or higher.

Applying the above suggestions would result in something similar to below:

- 35 - 50% delta-v survivable (approx 40 mph dV upper limit, annually increasing percentages due to energy-managing vehicle structures, advanced restraint systems, and autobrake technologies) - 85-90% efficiency at given speeds if the cantilevered guard ends are supported

- 79+% PCI avoided as a result of regulation 33 fatalities x 35-50% x 85-90% x 79% =

8-12 lives saved

29. **Professional Traffic Engineer & Cyclist Rock Miller - Comments** You should also consider requiring side guards due to the tremendous risk to bicyclists that are hooked into the wheel well of turning trucks. Cyclists often wait in an area near street corners that appears safe but in reality they are exposed to long turning trucks. Drivers may not even know it happened, and the cyclists did nothing wrong.

I am a professional traffic engineer and bikeway designer with much safety experience. If FARS data was more complete on factors associated with collisions involving trucks and bicycles, the extent of this problem would be clearly understood.

30. **Perry Lee Ponder (PLP) Seven Hills Engineering - Comments** I will begin by pointing out that continuing to allow truck and trailer induced PCI to occur at otherwise survivable crash speeds (delta-V's of 45mph and beyond) discards years of crashworthiness efforts and wastes the safety benefits we have come to expect and pay for in our cars. From an engineering perspective the need for vehicle crash compatibility in the form of adequate heavy truck underride guarding is apparent in order to protect against the hazard of PCI which exposes the vulnerable head and neck region to severe, potentially fatal or crippling injury. This hazard - easily remedied by readily available materials and simple structural analysis - is present also on the sides of heavy trailers and trucks. The FMVSS standard should be broadened to include guarding for the sides and rear of heavy straight trucks, as well as the sides of heavy trailers. This was the original intent of NHTSA rulemakers in the 1969 NPRM, Docket No. 1-11; Notice 2.

While the use of CMVSS 223 as a starting point for SUT rear underride protection is a big improvement from 49CFR393.86, CMVSS 223 still allows the outside edges of big trucks to remain essentially unprotected from PCI in partial overlap collisions. Since NHTSA seems to recognize this

partial overlap as a collision condition that compromises the effectiveness of a guard and utilizes this fact to increase the cost per life saved in their "cost-benefit analysis," why not address the offset-collision by bracing the outside edges in an improved design standard? The offset collision condition is clearly foreseeable, has long been documented in the underride literature, and was more recently demonstrated as hazardous by the IIHS testing, even on trailers equipped with CMVSS compliant guards.

The NHTSA cost analysis appears to overestimate the cost of improving the current guard design on SUT's. Most final stage manufactures of SUT's place 393.86 compliant bumpers on their trucks (having no way to know if their product will be used in inter or intra-state commerce). Cost to upgrade the guards should only include the cost to add the material for the extra strength and coverage over the current designs. The NHTSA cost of the upgraded guards also appears to have included costs of tooling, which should be reconsidered, and serves to inflate the guard cost. I can't imagine any SUT manufacturer not having the tooling in place, combined with the ability to buy most underride guard structural components off the shelf. The cost to manufacture the rear guard calculated by your contractor's proprietary software appears very high based on my experience as manufacturing trailers, underride guards, and truck components.

The cost per equivalent life saved would seem grossly overestimated by assuming that:
1) Approximately 80% of SUT's would need a completely new guard as opposed to a modified guard (or might be excluded by a wheels-back exemption), 2) That tooling costs should be included, 3) That a new standard wouldn't take steps to prevent PCI in offset collisions and therefore be more effective in preventing underride.

31. **City of Palo Alto Planning & Community Environment - Comment** I respectfully urge NHTSA include a side-guard requirement and a requirement for enhanced mirrors in this proposed rulemaking.
32. **City of Somerville Bicycle Advisory Committee - Comment** . Side guards physically cover the gap between the front and rear wheels of a truck. They are used throughout Europe, Asia, South America, Australia, and in several U.S. and Canadian cities. National laws have required side guard use in the United Kingdom since 1986, where in the wake of a national side guard mandate, 61 percent reduction in bicyclist fatalities and 20 percent reduction in pedestrian fatalities were reported in side impact collisions with trucks. Recognizing their safety benefits, London recently passed a Safer Lorry Scheme requiring side guards and Class V and VI mirrors on all construction trucks operating in that city, vehicles that were exempted from these requirements under the national law and indeed responsible for over half of all bicyclist deaths.

It is important to note that the substantial safety benefits identified in the U.K. were realized with a side guard regulation that allowed a generous maximum ground clearance of 550 mm (21.7"). Even greater safety benefits could be anticipated in the United States if more stringent side guard standards (350 mm/13.8" max clearance) were enacted, consistent with recommendations that the Volpe Center developed in a 2014 report for New York City's Vision Zero safety initiative. Furthermore, we stress that the total cost of these safety devices is only on the order of \$100-\$200 per year for a truck with a 10-year lifecycle, since they generally last for the life of the vehicle.

33. **Insurance Institute for Highway Safety - Comment** NHTSA estimates that adding to single unit trucks retroreflective treatments similar to those required on semi-trailers would cost about \$52 per truck. Although IIHS has not independently researched the role of conspicuity in the crashes of single unit trucks, we believe drivers of other vehicles need to be able to recognize single unit trucks as easily as they can recognize semi-trailers. IIHS supports the proposed amendment to FMVSS 108. IIHS is concerned, however, that NHTSA is underestimating the benefits and overestimating

the costs of including straight trucks in the underride guard regulations. NHTSA has estimated that requiring single unit trucks to be fitted with underride guards would cost \$1,232-\$1,958 per truck and save about five lives per year. The agency stated that these estimates “[are] strong indicator[s] that these systems will not be cost effective.” For reasons noted below, IIHS believes these estimates are flawed and urges NHTSA to take steps to revise them prior to making a final decision on whether or not to require single unit trucks to be equipped with rear underride guards. Lives saved estimate Any estimate of the costs and benefits associated with highway safety regulations is based on several approximations and assumptions. It is important that each of these is as accurate as possible. Table 1 shows the main approximations included in NHTSA’s estimate of how many lives could be saved each year by requiring single unit trucks to have underride guards. IIHS is concerned that two of these specific values are unrealistically low. First, IIHS believes that NHTSA’s 30 percent estimate for the proportion of fatal rear single unit truck crashes that had severe underride is too small. This figure comes from a report that NHTSA commissioned from the University of Michigan Transportation Research Institute (UMTRI) (Blower and Woodrooffe, 2013).

This analysis was an extension of the 2008 and 2009 Trucks in Fatal Accidents (TIFA) surveys conducted by UMTRI. These data were collected during phone interviews with someone who was familiar with each crash but may not have been at the crash scene, such as the truck owner or the truck carrier’s safety director.

In addition, the interviews can take place up to 2 years after the crash. In their own earlier study using similar methods, Blower and Campbell (2000) stated, “Collecting the data by means of telephone interview with people on the scene well after the fact probably is not sufficient to accurately measure degrees of underride.” Nonetheless, NHTSA now is using the specific degree of underride to determine whether passenger compartment intrusion occurred and whether underride guards would be beneficial.

IIHS has conducted underride analyses based on the photographic documentation contained within the Large Truck Crash Causation Study (Brumbelow and Blonar, 2010). While based on a smaller number of crashes, these analyses found higher rates of severe underride. Including cases with all injury severities, 46 percent of all 115 striking passenger vehicles had underride to the level of the windshield or beyond (restricting to single unit trucks, this was 55 percent). Among fatal crashes (n=28),

this proportion increased to 82 percent, including 7 of 9 single unit trucks. These figures suggest that severe underride in fatal single unit truck crashes is a more common problem than NHTSA has estimated and, consequently, that underride guards could save more lives.

The second concern with the lives saved estimate is the assumption that only 30 percent of crashes would be relevant based on impact speed (Table 1). The 56 km/h threshold for this estimate likely is too low. IIHS has conducted 56 km/h crash tests of underride guards certified to the level proposed by NHTSA in its ANPRM. Seventeen of these have been center impacts or had 50 percent overlap, and in 16 cases the underride guard prevented severe underride.

Based on the damage to the guard and striking passenger vehicle in these tests, there is no reason to believe that severe underride would have occurred at every speed higher than 56 km/h. Even in the worst case where the impact energy is sufficient that the guard deforms and separates from the trailer, it may slow the vehicle sufficiently to prevent severe underride and/or fatal injuries. NHTSA should conduct crash tests at higher speeds to determine the most reasonable threshold for deciding which crashes would have improved outcomes with underride guards. Even if 56 km/h is the most appropriate impact speed threshold to use in the lives saved calculation, the distribution of real-world fatal crash speeds that produced the 30 percent estimate is not robust.

This figure also is based on the recent UMTRI report (Blower and Woodroffe, 2013). Without vehicle crush measurements (or truck stiffness data), the speed distribution was calculated using a method that relied on the reported pre-skidding travel speeds recorded on police crash reports or during interviews. Reported travel speeds prior to any crash must be considered speculative. This is even more the case for crashes in the UMTRI report because the driver of the striking vehicle often was killed. Relying on such data increases the uncertainty associated with the overall lives saved estimate.

Cost estimate: NHTSA calculated the total cost of equipping single unit trucks with underride guards based on the manufacturing and installation of the equipment as well as increased fuel usage due to the higher truck weight. Fuel costs, which composed about 75 percent of the total, were calculated based on underride guard weights contained in an engineering analysis conducted for NHTSA by Waltonen Engineering (2013). These weights were not obtained by actually weighing the finished guards but by estimates based on the substantially heavier total material volume from which each component of the guard would need to be cut.

Table 2 shows a comparison of actual underride guard weights as measured by IIHS and the estimated weights for four guards from the same manufacturers that were included in the Waltonen Engineering report. These differences suggest that NHTSA's total cost estimate (including manufacturing, installation, and fuel) is about 35-40 percent too great.

NHTSA stated in its ANPRM that there are several reasons the agency could be overestimating benefits and underestimating the costs associated with this rulemaking. IIHS agrees that some of these factors could be meaningful. It is true that a proportion of fatal underride crashes are offset to the extent that some compliant guards could not prevent underride, though it should be noted that some trailer manufacturers are working to address this (IIHS, 2014). In addition, the structures of many single unit trucks would need to be modified in order to accommodate underride guards, and this would result in higher costs. But it is unlikely these additions would approach the magnitude by which the guard weights and fuel costs already have been overestimated. Overall, IIHS believes that the "cost per life saved" in the ANPRM is overstated rather than the opposite.

In conclusion, IIHS is pleased that NHTSA is considering the possibility of rulemaking to address rear single unit truck crashes. The agency's proposal to improve rear single unit truck conspicuity by revising FMVSS 108 is a relatively straightforward way to do this. However, the question of whether to require rear underride guards is more complex. We are confident that when NHTSA addresses the shortcomings of its current cost-benefit analysis, the agency will come to the same conclusion as IIHS that requiring underride guards on single unit trucks will save more lives at a lower cost than currently estimated.

34. **Ken Carlson - Comment** I urge the National Highway Traffic Safety Administration (NHTSA) to research and consider requirements for side impact guards and enhanced blind spot mirrors in addition to rear impact guards and other safety strategies, on single unit trucks. Incorporating these important safety countermeasures in the proposed rulemaking will be consistent with two recent National Transportation Safety Board (NTSB) recommendations to NHTSA and potentially save the lives of hundreds of people every year, especially people walking and bicycling. I urge that a future rulemaking address the need for these safety features on combination tractor trailers, which have been involved in multiple recent bicyclist and pedestrian deaths in the Somerville region where I live.

In 2014, Mayor Curtatone moved to require side guards on future heavy duty truck procurements for the City fleet. Unfortunately, we continue to witness preventable fatal crashes in our metro area involving the vast majority of trucks that are not city-owned and that cannot be regulated by the City. Federal action is required to ensure all trucks on Somerville's roads include this basic safety feature.

35. **Anonymous** I strongly encourage the National Highway Traffic Safety

Administration (NHTSA) to consider requirements for side impact guards and enhanced mirrors, in addition to rear impact guards and other safety strategies, on single unit trucks as part of this proposed rulemaking. Doing so is consistent with National Transportation Safety Board (NTSB) recommendations to NHTSA and improves safety for all users of the transportation system, particularly those who are walking and bicycling. A future rulemaking should address the need for these features on tractor-trailers.

36. **Theodore K - Comment** I write to comment on flaws in NHTSA's methodology for calculating the prevention of fatalities and the cost of equivalent lives saved in the ANPRM. Two issues loom large: (1) studies indicate that the sources of data NHTSA uses systematically underreport underride fatalities, and (2) NHTSA's calculation of effectiveness for CMVSS No. 223 rear impact guards (the Measure) in preventing fatalities in light vehicle crashes into the rear of SUTs with PCI. The result of these flaws is that the cost of equivalent lives saved is potentially grossly overestimated.

Underreporting of Underride Fatalities

There is a body of studies concluding that underride deaths are systematically underreported by some of the sources used by NHTSA, including FARS and LTCCS. One study found that underrides involving combination trucks are systematically underreported in FARS by a factor of 3.1. [Padmanaban, J. (2013). Estimating Side Underride Fatalities Using Field Data. *Annals of Advances in Automotive Medicine*, 57, 225-232.] The corresponding figure for LTCCS data was 3.5. [Id.; see also Trego, A., Enz, B., Head, D., and Oshida, Y., "A Scientific Approach to Tractor-Trailer Side Underride Analysis," SAE Technical Paper 2003-01-0178, 2003, doi:10.4271/2003-01-0178.] In light of this potentially large underreporting effect, NHTSA's estimated cost of equivalent lives saved could be substantially higher than it truly is.

Effectiveness Calculation for CMVSS No. 233 Rear Impact Guards

Also flawed is NHTSA's calculation of effectiveness for CMVSS No. 223 rear impact guards in preventing fatalities in light vehicle crashes into the rear of SUTs with PCI. NHTSA assumed the Measure would be able to prevent about 85 percent of light vehicle occupant fatalities with PCI in impacts into the rear of SUTs with crash speeds less or equal to 56 km/h, but noted that only 30% of light vehicle crashes with SUTs are at these speeds. NHTSA then estimated an overall effectiveness rate of 25% by multiplying 30% by 85%.

This calculation is severely flawed because it assumes that rear impact guards will prevent zero fatalities. This is clear error: by failing to take into account the possibility that rear impact guards would prevent any fatalities even one in any PCI incident above 56 km/h, NHTSA fails to exercise its discretion based on all of the relevant factors. [Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402 (1971)].

The net result of these errors is a large miscalculation of the cost per equivalent lives saved. Because an agency must explain the evidence which is available and must offer a rational connection between the facts found and the choice made, the methodology as it stands may fail arbitrary and capricious review. [Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 52 (1983)].

37. **National Waste & Recycling Association - Comment** These trucks often go off-

road, especially at construction sites. The proposal of reducing the ground clearance of these trucks to 22 inches and placing the underride protection devices within 12 inches of the rear of the truck raises serious concerns about the off-road function of these trucks. The proposed ground clearance reduction will lead to trucks becoming stuck at construction sites, quarries and mines, and even at landfills where they regularly unload and cause potentially dangerous and unsafe operational situations. We propose working with the agency to prepare a safer and more effective alternative for these vehicles. **Impact to truck weight, cost, and payload**

In its analysis, the agency estimates a “minimum to average incremental weight of CMVSS guard per SUT” of 169-210 pounds. The agency also acknowledges a minimum to average incremental fuel cost as a result of the extra weight of resulting from the additional weight of the guards and from strengthening frame rails and rear beams to accommodate the proposed rear impact guard.

Federal and state truck weight laws pose unique operational challenges for refuse trucks. In particular, the Federal Bridge Formula B prevents refuse trucks and other specialized hauling vehicles from using their full productive capacity. An empty refuse truck weighs between 31,000 and 33,000 pounds. A “full” truck is limited to approximately 51,000 pounds as a result of the Bridge Formula. As a result, when the empty weight of the truck is increased for whatever reason, whether it is additional safety equipment or alternative fuel equipment that protects the environment through the use of, for instance, compressed natural gas instead of diesel, the productive weight of the truck is decreased.

Further reduction in payload will have a significant economic impact. Ironically, ten days after the agency proposed this rule, it joined with EPA in proposing reductions in greenhouse gas emissions and increased fuel efficiency for medium- and heavy-duty trucks (see Federal Register / Vol. 80, No. 133 / Monday, July 13, 2015, pages 40138 – 40765). In that rule the agencies discussed various weight reduction measures that could be undertaken by the manufacturers of vocational vehicles such as refuse trucks. The two agencies stated they “believe a reduction of 200 lbs. may offer a fuel efficiency improvement of approximately 1 to 2 percent” (see page 40301). Yet this proposal wipes out those weight reduction savings and destroys the potential fuel efficiency improvements We recommend that additional cost-benefit analysis be conducted to include cost increase, weight increase, payload reduction and impact on fuel efficiency prior to enacting the proposed rule.

38. **District Department of Transportation - Comments** The Bicycle Safety Enhancement Act of 2008 requires all District-owned, heavy-duty vehicles install side-underrun guards to prevent bicyclists, other vehicles, or pedestrians from sliding under rear wheels. The legislation also requires blind spot mirrors and reflective blind spot warning signs (on District-owned, heavy-duty vehicles). As a part of the District's Vision Zero objective, which outlines a goal to reach zero fatalities and serious injuries to travelers of our transportation system by 2024, the District is looking at strategies to ensure all trucks registered in the District are outfitted with side impact guards, cross-over mirrors, and reflective blind spot warning signs. Federal action is needed however to require side impact guards, cross-over mirrors, and blind spot reflective warning signs on the non-city owned, non-city contracted, and trucks registered in other states.

- 39. Transport and Road Safety (TARS) Research Centre - Comment** To break the impasse between safety stakeholders and regulators, the Authors of this submission have proposed to incorporate into the revision of the ASNZS3845.2 Australian Road Safety Barrier Systems and Devices a crash test performance requirement for rear under-run barriers for heavy trucks, shortly to be released for public comment. In that standard test requirements for under-ride barriers, called Truck Under-run Barriers (TUBs), has been developed and now included. We hope that this standard will be approved by committee members (members include Australian State Government regulators) and hopefully will be published in early 2016. The tests requirements are in part based on the US Manual for Assessing Road Hardware (MASH) and are presented below. We would strongly recommend that NHTSA consider such dynamic performance tests when they deliberate their development of the Federal Motor Vehicle Safety Standard for under-ride barriers. Around 10 people per year on average are killed in Australia in rear under-run crashes resulting in horrific injuries such as decapitation.¹³ Yet the Regulation Impact Statement (RIS)¹⁴ for Underrun Protection published by the Vehicle Safety Standards Branch at the Department of Infrastructure, Transport, Regional Development and Local Government in July 2009 recommended that only front under-run protection be applied to all rigid and articulated trucks. Their conclusion was that the cost-benefit ratio for frontal under-run barriers was greater than one whereas for side and rear under-run the benefit was negative, and hence such protection should not be mandated in an Australian Design Rule. Yet despite these numerous calls for changes over the past three decades, we continue to consistently kill people in such crashes, ignoring the fact that practical low cost effective under-run barriers can be fitted. That is the real unforgivable tragedy. The most recent call for changes to the ADRs posted by the NSW NRMA Motoring and Services association in 2010¹⁵ we indeed continue to only find crocodile tears being shed by federal regulators. Whilst this submission welcomes the US National Highway Administration's revisiting the issue of rear under-run protection for trucks, yet again, it appears that NHTSA is embarking on a similar pathway of regulation based on a cost-benefit analysis as the Australian Regulators did in July 2009. It needs to be pointed out that the US have committed to Towards Zero Deaths paradigm which is based on the Vision Zero and Safe System principles^{16,17}. The US Towards Zero Deaths: A National Strategy on Highway Safety states: "The Toward Zero Deaths National Strategy was developed with input from numerous stakeholders, along with support from several agencies within the United States Department of Transportation, and is intended to represent a consensus-based document." The Vision Zero and Safe System approach adopted by most of the world now and on which Towards Zero Deaths is anchored, boldly moves away from the economic- rationalist 'costbenefit' models (cited in this Docket as still being used by NHTSA), to a humanistic more rational model. The important aspect of a 'Vision Zero' principle is that it introduces 'ethical rules' to guide the system designers. In other words: • Life and health can never be exchanged for other benefits within the society • Whenever someone is killed or seriously injured, necessary steps must be taken to avoid similar events.
- 40. Lawyer, Ricardo Silva - Comment** The present comment is a contribution to the NHTSA Proposed Rule for Rear Impact Protection Equipment on Single Unit Trucks, in order to mitigate underride crashes into the rear of SUTs. The proposed rule requires underride guards on vehicles

not currently required by the FMVSSs to have guards, primarily SUTs with a gross vehicle weight rating (GVWR) greater than 4,536 kilograms (kg). We support the proposition and align with the position of the Harvard School of Public Health and the petitioners, Marianne Karth and the Truck Safety Coalition, that initially raised the issue beyond NHTSA.

However, we believe that the Cost and Benefit analysis underestimates the benefits and overestimates the costs of including straight trucks in the underride guard regulations, and thus leaving a flank opened for a future judicial review proposed by those who opposes the proposition. Our recommendation is that NHTSA addresses the shortcomings of the proposal by reviewing its cost-benefit estimations.

Cost-Benefit Estimations

The reason to make a cost-benefit analysis is straightforward and its goal is to maximize the net benefit of regulation. However, flaws on cost-benefit estimations have been used to strike down regulations whether on Courts or on the OMB. That is why our focus is to sharpen the accuracy of these calculations.

The main concern is that the number of lives that could be saved by requiring STU to have underride guards could be too low. The ANPRM release cites studies conducted by the Insurance Institute for Highway Safety - IIHS. However, when analyzing the specific issue of estimation of lives saved, the IIHS itself objects the 30% proportion of fatal rear crashes on SUTs that had severe underride. The data utilized to state the 30% proportion is not only outdated (extension of the 2008 and 2009 Trucks in Fatal Accidents - TIFA surveys), but also based on telephone interviews with people who may not have been on the crash scene, and that took place up to 2 years after the crash. More recent studies conducted by IIHS based on photographic documentation contained on "CRASH TEST PERFORMANCE OF LARGE TRUCK REAR UNDERRIDE GUARDS" (<http://www-nrd.nhtsa.dot.gov/pdf/esv/esv22/22ESV-000074.pdf>) showed a proportion of 55% of underride to the level of the windshield or beyond on STUs, when referring to cases of all injury severities, and of 82%, when referring to cases of fatal crash. A recent UMTRI report (Blower and Woodroffe, 2013) also contradicts the 35 Mph threshold used in the lives saved calculation, showing that the distribution of real-world fatal crash speed that were the basis for the 30% proportion is not robust or based on strong findings.

Basis for future judicial review

Since our concern is to see this new regulation upheld by the Courts, the recommendation is that NHTSA takes in consideration all the aspects of the problem, addressing properly all the cost and, specially, the benefits of the proposition. If the Agency fails to consider all the factor of the issue (US Supreme Court, Motor Vehicle Manufacture's Association. vs. State Farm Mutual Auto. Insurance Co., 463 U.S. 29, 43), including the possible benefits, or fails to articulate a satisfactory explanation of its action by relying on inaccurate data (US Supreme Court, Massachusetts v. Environmental Protection Agency, 549 US 497, 127), this regulation can be considered Arbitrary and Capricious, and thus unlawful. We strongly recommend a revision on cost-benefit estimations.

- 41. Dave Schofield - Comment** A lot of these types of vehicles are sold as a cab chassis with the bed to be installed later. If these new trucks are going to be required to have the rear guards when sold to meet FMVSS certification it appears you have not considered the additional cost of relocating guards if they interfere with the type of bed to be installed. If the rear guard is moved or redesigned to accommodate a specialized bed, will that vehicle meet the safety requirements in this ANPRM as well as the requirements of the proposed vehicle safety sticker requirements? If not who is going to certify that the vehicle meets current safety standards? If the rear guard is moved or redesigned to accommodate a specialized bed, will that vehicle meet the safety

requirements in this ANPRM as well as the requirements of the proposed vehicle safety sticker requirements? If not who is going to certify that the vehicle meets current safety standards? If this proposed rule becomes effective you have failed to take into account the cost of the continued up keep of the tape and the rear guards. Your cost estimates only deal with new vehicles and installation on these, but you did not address any upkeep costs. Your estimates only dealt with the operation of vehicles in interstate operations. As you well know, most states will adopt the interstate rules for intrastate requirements. Again, you failed to consider those costs into your estimates. By your own estimates in the ANPRM the rear impact guards are not cost effective and there are still additional costs with the proposal you have not included in the ANPRM. Guidance from the U.S. Department of Transportation \35\ identifies \$9.1 million as the value of a statistical life (VSL) to be used for Department of Transportation analyses assessing the benefits of preventing fatalities for the base year of 2012. Per this guidance, VSL in 2014 is \$9.2 million. While not directly comparable, the preliminary estimates for rear impact guards on SUTs (minimum of \$106.7 million per equivalent lives saved) is a strong indicator that these systems will not be cost effective (current VSL \$9.2 million). As in the analysis for Class 3-8 SUTs shown in Table 2, the preliminary estimates for rear impact guards on Class 4-8 SUTs (minimum of \$55.2 million per equivalent lives saved) is a strong indicator that these systems will not be cost effective (current VSL \$9.2 million). Also you did not take into account the cost of training enforcement personnel, both interstate and intrastate for the inspectors, the cost of training for the industry and the costs to a company to correct any perceived defects on inspections with either the tape or the rear guards. The conspicuity tape to mark the high points of a vehicle will most likely go on the back of the cab area of the truck. What will these additional stickers do to the paint and what is the cost to remove them when the vehicle is no longer a CMV or how will that affect trade in value? After reviewing FMVSS 224 and 393.86(b)(2) attempting to apply this regulation to straight trucks will be confusing to say the least, simply because will be difficult to meet compliance on specialty trucks. Rather than make regulatory compliance more confusing, complicated and costly I would suggest you look at less confusing and broader solution for all vehicles to have crash avoidance systems, which would reduce crashes and fatalities not only with CMVs, but all crashes.

- 42. Transportation Safety Equipment Institute - Comment** TSEI believes that NHTSA should adopt a similar fitment and retrofit approach as was utilized in the requirement for tractor-trailer systems. NHTSA's evaluation ("The Effectiveness of Retroreflective Tape on Heavy Trailers," March 2001, NHTSA Technical Report, DOT HS 809 222) indicates that conspicuity tape is "41 percent effective in preventing side and rear crashes into SUTs in dark-not-lighted conditions." Although TSEI does not have its own data on the subject, we generally believe that the stated effectiveness is generally accurate. Given the significant safety benefit that conspicuity tape provides, TSEI recommends that NHTSA consider requiring current vehicles to be retrofitted with conspicuity tape.
- 43. Advocates for Highway and Auto Safety - Comment** Advocates supports the petition filed by Ms. Marianne Karth and the Truck Safety Coalition (TSC) to reduce the fatalities and severity of injuries suffered by passenger vehicle occupants that strike the rear of SUTs. Advocates concurs with the agency's preliminary analysis that requiring retroreflective tape on the side and rear of SUTs appears to be a cost effective manner for preventing some impacts with SUTs. In fact, requiring retroreflective tape is long overdue. However, retroreflective tape treatment alone is not a sufficient countermeasure. While retroreflective tape may help prevent some collisions with SUTs, it will not prevent all such collisions and it is the rear underride guard which

will prevent or mitigate fatalities and injuries when collisions nevertheless occur. Advocates is concerned with the agency's method of identifying a target population for its benefit-cost analysis and, we believe, the agency may be undercounting crashes, fatalities and injuries which may be prevented or mitigated by underride guards. Advocates concurs with the agency's apparent intention to apply the underride requirement to all SUTs regardless of whether the vehicle is intended for use in interstate commerce. Yet, the agency's analysis of the installation of underride guards, coupled with the retroreflective tape analysis, indicate that the agency clearly favors seeking retroreflective tape treatments as the sole countermeasure for rear end crashes with SUTs. Moreover, at this early stage of rulemaking it is inappropriate for the agency to foreclose underride guards as an effective means of protecting passenger vehicle occupants. The NHTSA's benefits estimates are predicated on identifying a target population, which the agency has defined as light vehicle impacts to the rear of SUTs with passenger compartment intrusion (PCI) with impact speeds of 35 mph or less. In order to support the identification of this target population, the agency relies extensively on research conducted by the University of Michigan Transportation Research Center (UMTRI).² Advocates is concerned that the data used to estimate the annual number of light vehicle impacts into SUTs with PCI, and the estimates of the impacts speeds may be incorrect for a number of reasons that could affect the calculations presented by the agency. First, the NHTSA is using data that may not provide information regarding the degree of intrusion into the passenger vehicle. The agency relies on data from the UMTRI study which is based on the Trucks In Fatal Accidents Survey (TIFA) and uses primary data from the Fatality Analysis Reporting System (FARS), police reports, and interviews with parties "with direct knowledge of the truck configuration at the time of the crash" including the truck driver, owner or operator of the truck, or safety director. If primary sources are unable to provide all of the necessary data, the researchers contact additional sources such as the reporting police officer, any other crash investigator, or other persons present at the scene, including tow operators and witnesses.³ In terms of identifying the population with respect to this data collection process, the item of most concern is identifying the occurrence of PCI. Specifically, neither the FARS data nor the police reports they rely on typically include reporting of intrusion let alone specific information on passenger compartment intrusion.⁴ Moreover, relying on the recollections of collision participants and witnesses, specifically participants who may still be a party to pending litigation filed against them such as truck drivers and/or owner operators, for information is highly questionable. Advocates does not deny that the submission of additional information such as official reconstruction reports or scene photographs may alleviate many of these questions, however there is no indication by UMTRI or NHTSA of the breakdown of the sources used to establish the number of crashes involving PCI. For similar reasons, Advocates is not satisfied with the relative velocity estimates which the NHTSA uses to effectively cut the predicted effectiveness of underride guards from 85 percent down to 2 percent. The agency itself notes that relative velocity was able to be estimated in only 30 percent of the light vehicle collisions with SUTs or trailers.⁵ The agency provides no count of how many cases were finally used to establish the conclusion that 70 percent of light vehicle impacts into the rear of SUTs which results in PCI had relative velocities greater than 35 mph. Advocates is concerned with this conclusion not just because it results in using a very small number of cases, but also because SUTs are used for local deliveries and would not generally be expected to be found in locations prone to high impact speeds. Advocates is also concerned with the methods used to estimate relative velocities. Underride collisions are notoriously difficult to analyze using traditional reconstruction methods. Furthermore, the UMTRI report indicates

44. Anonymous Brilliant! We are going to increase expenses on the trucking industry by half a billion

dollars to save 5 lives a year yet we allow 1 million abortions a year. How do you justify that?

45. **Medical Academic and Scientific Community Organization, Inc. - Comment** I am writing to encourage the National Highway Traffic Safety Administration (NHTSA) to expand the scope of this proposed rulemaking to include requirements for side impact guards and enhanced mirrors on new single unit trucks. Doing so is consistent with National Transportation Safety Board (NTSB) recommendations to NHTSA and improves safety for all users of the transportation system, particularly those who are walking and bicycling.
46. **Walk Boston, Communications Manager, Brendan Kearney - Comment** WalkBoston supports the efforts by the National Highway Traffic Safety Administration (NHTSA) regarding rear impact guards. We hope that NHTSA will also consider requirements for side impact guards and enhanced mirrors as part of this rule making.

WalkBoston is a member of the City of Boston's Vision Zero Task Force, which is working toward making Boston safer for all people, no matter what manner of transportation they are using to get around the City. We are encouraged by the comment letter from Boston Transportation Department Commissioner Gina Finadaca, which gives great insight into the steps the City has taken so far to implement side guard regulations, and why it is important further rulemaking comes from the national level.

47. **City of Boston - Boston Transportation Department - Comments** The City of Boston strongly encourages the National Highway Traffic Safety Administration (NHTSA) to consider requirements for side impact guards and enhanced mirrors, in addition to rear impact guards and other safety strategies, on single unit trucks as part of this proposed rulemaking. Doing so is consistent with National Transportation Safety Board (NTSB) recommendations to NHTSA and improves safety for all users of the transportation system, particularly those who are walking and bicycling. A future rulemaking should address the need for these features on tractor-trailers.

Since 2010, seven people riding bikes in Boston were killed in crashes that involved large trucks and buses. In 2013, the City began installing side guards on City trucks. In 2015, Mayor Walsh put forth legislation that was unanimously approved by the Boston City Council requiring city-contracted vehicles to install side guards and crossover mirrors. Unfortunately, we continue to witness fatal crashes involving trucks that were neither city-owned nor city-contracted. Federal action is needed to ensure all trucks on Boston's roads include this basic safety feature. We commend NHTSA for advancing rules that will save lives by requiring rear impact guards and other safety features on single-unit trucks and tractor trailers. We respectfully urge NHTSA include a side guard requirement and a requirement for enhanced mirrors in this proposed rulemaking.

48. **National Asphalt Pavement Association - Comment** In the late 1990s, during the rulemaking process for Federal Motor Vehicle Safety Standard (FMVSS) No. 224, DOT recognized that the proper use of asphalt discharge trailers would be hampered by the narrowed (shorter) definition of a "wheels back" trailer. DOT recognized the impracticality of equipping asphalt discharge trailers with underride guards, noting that underride guard geometries would adversely impact the discharge of asphalt pavement mix into standardized paving machine bins due to the standard configuration of paving machines. In 1999, DOT exempted underride protection on asphalt discharge trailers stating that "compliance with Standard No. 224 would cause substantial economic hardship . . . and that an exemption would be in the public interest and consistent with the objectives of traffic safety." Similarly, DOT also noted ". . . that the risk to safety is minimized to the extent that road construction trailers spend comparatively little of their operating life traveling on the highways" (64 Fed. Reg. 49047-9). In 2003, DOT stated that, ". . . it is impracticable to engineer a horizontal discharge trailer that meets both the letter of the standard and the mission needs of the trailer" (68 Fed. Reg. 28880-1). Since 2004, FMVSS No. 224 has explicitly exempted such underride protection for these asphalt discharge trailers (69 Fed. Reg. 67668; 49 CFR 571.224.S3). Similar to asphalt discharge trailers, the type of underride protection

currently proposed for SUTs, e.g., rear dump trucks, would interfere with the unloading of asphalt pavement mix. Because, for more than 60 years, the specialized paving machines used to apply asphalt pavement mix have been designed and manufactured to meet the 24-inch "wheels back" clearance, the installation of underride guards on standard rear-discharge dump trucks (one class of SUTs) would inhibit the ability of the truck to be positioned properly for delivery of asphalt pavement mix into the hopper of a paving machine. Accommodating underride guards would necessitate the redesign of an entire class of equipment and revision of standard paving practices known to produce high quality pavements. The industry estimates there are more than 10,000 standardized asphalt paving machines in current operation at an average replacement cost of \$400,000 for each paving machine. The monetary cost (and time required) to engineer either a retrofit or new design for paving machines to work with a shortened "wheels back" clearance is difficult to estimate, but it is certain to be a multiyear process with significant development and implementation costs. If existing asphalt paving machines become unusable due to the proposed underride protection requirement, grave economic harm to businesses and communities will occur. This includes substantial negative impact on efforts to improve and maintain our nation's infrastructure. For these reasons, the direct and indirect costs of requiring underride guards on SUTs, particularly rear-discharge dump trucks, with a "wheels back" clearance between 24 and 12 inches, would make the proposed rule impractical, if not unworkable. While the asphalt pavement industry is supportive of efforts to improve the safety of paving operations and equipment, it is clear that shortening the effective "wheels back" clearance exemption from 24 inches to 12 inches and mandating the fixing of underride guards on SUTs, such as rear-discharge dump trucks, is impractical and would cause significant hardship and disruption to the road construction sector. In addition, a requirement for retroreflective material is likely to have little benefit because normal operational activities are almost certain to reduce its reflective properties.

- 49. Elizabeth Vissers - Comment** My comments are aimed at ensuring the agency provides adequate reasoning and explanation for certain assumptions and decisions in order to withstand potential judicial review of the final rule. In particular, arbitrary and capricious review requires that an agency articulate satisfactory explanation of its action including a rational connection between the facts found and the choice made. (See *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29 (1983).)

Percentage of SUTs with and without rear impact guards

Following Table I on Federal Register page 43666, you assert that, "Since the data presented in Table 1 takes into consideration all SUTs involved in all types of fatal crashes in 2008 and 2009, we assume that the percentage of SUTs with and without rear impact guards in Table 1 is representative of that in the SUT fleet." This assumption is important because that percentage is used in the cost benefit calculations, but it may be problematic. What if certain types of SUTs are more likely to be involved in fatal crashes, and in addition there is some type of correlation between those particular types of SUTs (which would thus be overrepresented in this crash data) and the likelihood of having a rear impact guard? Please explain why you don't think there is such an intervening factor, or why it can be ignored.

Choice between FMVSS No. 223 and CMVSS No. 223

One of the reasons you provide for choosing to analyze the cost and benefits of requiring SUTs to comply with the requirements of CMVSS No. 223 rather than FMVSS Nos. 223 is that "since a high percentage of crashes into the rear of SUTs are at high speeds, it is unlikely that equipping all SUTs with FMCSR 393.86(b) would sufficiently mitigate light vehicle occupant fatalities in PCI crashes into the rear of SUTs." But when calculating the benefits of CMVSS No. 223, you note that "only 30 percent of the target population of light vehicle crashes with PCI into the rear of SUTs are at speeds less than or equal to 56 km/h." It seems strange to rule out an alternative (the FMVSS Nos. 223

requirement) because most crashes with PCI happen at high speeds when the crashes at those high speeds aren't part of the benefit calculation anyway. State Farm demonstrates that reasonable alternatives must be considered, and a sound explanation must be provided when choosing to rule out alternatives. If FMVSS Nos. 223 and 224 requirements were developed to prevent PCI in 48 km/h (30 mph) impacts of compact and subcompact passenger cars into the rear of trailers and CMVSS No. 223 performance requirements were developed to prevent PCI in 56 km/h (35 mph) impacts, but most crashes are at speeds higher than 56 km/h, what are you gaining by choosing CMVSS No. 223 rather than FMVSS Nos. 223? Moreover, why are your options limited to an existing standard why can't you come up with your own standard based on cost benefit calculations?

- 50. John Guskasib - Comment** As a long-time transportation industry professional, it is my opinion that CMVs should not be exempt from "bumper height" or any other safety regulations. The intent of safety regulations is to assure, as much as possible, that injuries sustained in a crash are minimized. It is appalling that some feel a modest per unit cost is worth the lives of people. I have reviewed much of what has been published and saw nothing from insurance companies on the costs to vehicles or personal injury statistics in the financial evaluation. It is the duty of State and Federal Regulators to produce regulations that provide protection from unnecessary risk to the public welfare, this is one example. The argument is not one of cost, but of personal injury or death from a failure to provide adequate, even rudimentary under-ride protection to motorists.

- 51. Meehan Boyle Black & Bogdanow - Comment** Attached please find letters from the Weigl and McGrory families, both of whom lost family members as a result of trucks turning right on urban streets and running over bicyclists in marked bike lanes. Neither of the vehicles involved was equipped with side guards.

We join with the City of Boston in respectfully requesting that the National Highway Traffic Safety Administration (NHTSA) consider requirements for side impact guards and enhanced mirrors, in addition to rear impact guards and other safety strategies on single unit trucks as part of this proposed rulemaking. Doing so is consistent with National Transportation Safety Board (NTSB) recommendations to NHTSA and improves safety for all users of the transportation system, particularly those who are walking and bicycling. A future rulemaking should address the need for these features on tractor-trailers.

- 52. National Cotton Ginners' Association - Comment** Modern module trucks are manufactured with a rear bumper, which is designed specifically to provide the type of protection that this proposed rule contemplates. The design of our rear bumper has been carefully developed to not only provide safety, but also to ensure that the primary purpose of the truck will not be compromised. The bumpers on cotton module trucks must be folded up into the bed before the truck can be loaded or unloaded. Anytime the trucks go off-road or over a terrace or embankment, a lower installed bumper may possibly drag, in turn causing damage, or pulled off the unit. The proposed "cost-effectiveness" calculations indicate that this rule is certainly not cost-effective, and we believe that the costs are vastly under-stated for specialty units that are similar to ours. We have received preliminary estimates from manufacturers indicating that operation and maintenance expenses for the proposed type of bumper alone could be on the order of \$4,000 per year. Much higher costs than originally estimated are involved when the vehicle bumper has to be raised or retracted to accomplish the main task or duty of this type of SUT. The initial cost of the vehicle bumper would likely be much more than the estimated operation and maintenance expenses because significant alterations would be needed for the truck. Moreover, any bumper installed on our trucks must be equipped with a fairly complex set of controls to allow the bumper to be folded back into the truck during loading and unloading. Initial costs are

difficult to estimate, since a slight change in the height from the ground or rear of the unit will require extensive R&D in an area that is already well-developed for our specific vehicles. Additionally, this proposed rule suggests that retroreflective material be used on the rear and sides of the vehicles to improve the conspicuity of the vehicles to other motorists. While we are not commenting on the rule's suggestion, the NCGA notes that many of our trucks already are equipped with this retroreflective material as a safety measure. In summary, we believe that the "cost-effectiveness" calculations shown in the ANPRM clearly demonstrate that this proposed rule is not cost-effective. At the same time, we maintain that the costs are significantly under-stated in the notice. Requiring one set of bumper specifications for all single-unit trucks will result in many unforeseen consequences that may result in a requirement for very complex and expensive systems. At a minimum, if this proposed rule moves forward, either exemptions or significant flexibility must be included in the allowable bumper configurations for single-unit trucks.

- 53. Oshkosh Corporation - Comment** Many vocational vehicles must have good off-road mobility at construction sites, landfills, farm yards, wildland areas, and other unimproved sites where the ground is uneven, rutted, muddy, and full of ground clearance hazards. Snow plows, salt spreaders, and other road clearing vocational trucks work in deep snow and must negotiate snow drifts, and piles. All these conditions require excellent ground clearance and high departure angles. The extension of FMVSS 123 and 124 to SUTs without addressing these concerns would be detrimental to the performance of the work these trucks need to accomplish. It is likely that such devices, if mandated, would be subject to constant damage, leading to a much higher cost that is addressed in the ANPRM.

We believe that on many applications, a FMVSS 123 type guard on a vocational SUT could require repair or replacement many times each year. For this reason we believe the cost included in the ANPRM is significantly underestimated. The degree to which replacement or repair would be required should be solicited from vocational vehicle industry organizations prior to moving forward.

High Lift Tag Axles Interference has Unintended Consequences Concrete delivery trucks and certain other construction trucks may be equipped with a high lift tag axle that is required to satisfy State or local road and bridge laws. An energy absorbing device in front of this axle would only serve the purpose while the axle is raised. An energy absorbing device for use when the axle is lowered would increase the length of the vehicle when deployed, and would likely exceed the legal height of the vehicle when raised. The extension of FMVSS 123 and 124 to SUTs without addressing these concerns would be detrimental to the performance of the work these trucks need to accomplish. The loads currently carried by trucks operating in locations where high lift tags are required would need to be drastically reduced. This would lead to the following negative consequences:

Hitch Connections Incompatible with Energy Absorption Many work trucks include hitches for hauling trailers. A trailer hitch must be located at the extreme rear of the truck, and must meet the applicable structural strength standards mandated for the type and capacity of hitch. Structural hitch strength is not compatible with energy absorption (you can't have both). A rulemaking that disallows a trailer hitch will cause the operator to run two SUTs to carry the load or equipment that they could otherwise carry with a combination SUT and trailer. This would lead to the following negative consequences:

The addition of an energy absorbing underride guard to SUTs would increase the weight of the vehicle, both in the weight of the device itself, and in the weight of additional structure and mounting hardware. This additional weight will have three extremely negative consequences:

There are many vocational SUTs where an energy absorbing device at the rear

of the vehicle would interfere with the work that the truck must perform. Examples of this include: As pointed out in these comments, there are numerous practical and unavoidable reasons why the same energy absorbing underride guard regulations that apply to trailers should not be applied to SUTs. One important reason revolves around the need for vocational SUTs to be able to perform their work effectively, allowing them to be used to in a manner that benefits the people they serve. A second, and equally important reason, is that the proposed rulemaking runs counter to rulemakings by both NHTSA and the EPA in the Heavy Truck GHG and Fuel Economy regulations. These regulations have been promulgated by both agencies after a massive amount of study. The benefits of these regulations are well documented and have been the reason given for rules that have tremendous impact on heavy duty vehicle design. It is incongruous to consider further regulation that would necessarily negate gain being made by these already established rulemaking initiatives.

- 54. Comment of Boston Public Health Commission** Our city has seen many injuries and fatalities due to large trucks making right hand turns and pedestrians and/or cyclists being caught in their blind spots. The difference between life and death typically depends on if the truck in this situation has side guards or not. Side guards prevent pedestrians/cyclists/motorcyclists from being dragged under a truck and being run over. Although a side impact collision would likely result in injuries, research in the UK has shown a dramatic decline in fatalities. In 2015, Mayor Walsh signed an ordinance requiring crossover mirrors and side guards on all city-contracted trucks. Unfortunately this only applies to a small segment of the trucks on our streets, so federal regulations are critical here. Our Mayor has vowed for safer streets for all users and even formed a Vision Zero Task Force to work towards zero traffic fatalities. In order to do that, we need to ensure that trucks are properly fitted with the latest safety features, including rear and side impact guards and crossover mirrors. We applaud NHTSA for taking the first step in improving safety for vulnerable road users, but we encourage the proposed regulation to be expanded to ensure optimal safety, especially since this technology is readily available and is proven to be effective.
- 55. Truck and Engine Manufacturers Association (EMA) - Comments** NHTSA must ensure that FMCSA updates its existing in-use rear impact guard regulation to align with any FMVSS that mandates rear impact guards on new SUTs. Additionally, we note that FMCSA's regulation exempts "vehicles in driveaway-towaway operations." See, *Id.* Driveaway-towaway is a specific and limited operation of commercial vehicles for transporting them between manufacturing facilities, dealerships, terminals and/or repair facilities, typically by towing a vehicle by means of a saddle-mount or a tow bar. See, 49 C.F.R. § 390.5. Since driveaway-towaway operation is limited, temporary and outside the primary application of a SUT, in most cases it would not be cost effective to require rear impact guards. Furthermore, in cases where the vehicles are being transported by means of a saddle-mount or a tow bar, it would be impracticable to install a rear impact guard because it may drag on the roadway or interfere with the towing connection. Accordingly, we urge NHTSA and FMCSA to consider including provisions for a driveaway-towaway exemption in any upgraded rear impact guard regulations. Similarly, NHTSA and FMCSA should consider any other applications where use of rear impact guards is impracticable or not cost effective, similar to the specialized and low-chassis vehicles that are exempted from the existing NHTSA and FMCSA regulations. before the vehicle is put into service, EMA member companies seldom install the guards during their manufacturing operations because SUTs customarily are manufactured in multiple stages by two or more distinct entities and the rear impact guards are installed by a subsequent manufacturer. That is, EMA member companies manufacture incomplete vehicles, often in a configuration called a "chassis-cab," that are modified by one or more subsequent manufacturers. In the case of a single unit CMV, the final-

stage manufacturer, or “bodybuilder,” typically installs the rear impact guard that is required by FMCSA’s regulation. The manufacturing of a vehicle in multiple stages may involve two or more of the following entities: (i) an incomplete vehicle manufacturer, (ii) intermediate manufacturers, (iii) a final-stage manufacturer, and occasionally (iv) an alterer, who alters a vehicle completed by a final-stage manufacturer. NHTSA’s certification regulation appropriately allocates responsibility for assuring FMVSS certification to each entity involved in the multi-stage manufacturing of a vehicle. See, 49 C.F.R. pt. 567. A typical SUT initially is manufactured as a chassis-cab by an EMA member company, and it is completed by a bodybuilder that assumes responsibility for installing the FMCSA rear impact guard. The chassis-cab manufacturer does not install the rear impact guard because they do not know the nature of the body and rear chassis treatments that will be installed before the vehicle is completed. In many cases the bodybuilder will install a lift, decking, steps, and/or a bumper in accordance with the specifications of the truck purchaser. In fact, many times the bodybuilder cuts and/or reconstructs the rear frame of the chassis-cab to accommodate the particular body or equipment installed. Because the rear chassis treatments are not known by the chassis-cab manufacturer, only the bodybuilder is in a position to install the rear impact guard. Even in an environment contemplated in the ANPRM where rear underride guards on SUTs are more robust and effective (and likely more complicated) than the FMCSA regulation requires, NHTSA must retain the current practice of bodybuilders installing the guards. Requiring the incomplete vehicle manufacturer to install a rear underride guard on a SUT would be illogical and wasteful. Under such a reversal of the customary allocation of responsibility among multi-stage vehicle manufacturers, the final-stage manufacturer would need to remove or modify the guard to accommodate the body and/or equipment it subsequently installs. The ANPRM requests comment on the potential additional cost and weight of strengthening rear frames of SUTs to install the rear impact guards that Transport Canada currently requires on trailers in Canada. (Transport Canada requires more robust rear impact guards on trailers than does NHTSA’s FMVSS.) EMA member companies have analyzed existing SUT chassis and determined that they would not need to strengthen the rear frame of most heavy-duty SUTs to install rear impact guards meeting Transport Canada’s requirements.

- 56. Richard Griffin - Comment** In its analysis of fuel costs, NHTSA also failed to take into account the possibility that manufacturers could innovate and come up with ways to reduce weight in other areas of the trucks that would negate the increased weight of guards. This would admittedly be difficult to quantify, but it is a factor that should be considered.

Although it is unclear whether these factors would be enough to shift the cost/benefit analysis in favor of promulgating this requirement, it is important that they be properly weighed in coming to this decision.

- 57. City of Cambridge - Comment** Truck side guards are vehicle-based safety devices designed to keep pedestrians, bicyclists, and motorcyclists from being run over by a large truck’s rear wheels in a side-impact collision. Following the national side guard mandate in the UK, there was a 61 percent drop in cyclist fatalities and a 20 percent drop in pedestrian fatalities in side-impact collisions with trucks. For further information, we refer you to the following resources:
<http://www.volpe.dot.gov/our-work/truck-side-guards-resource-page>

Last spring, the City of Cambridge announced a partnership with the Volpe National Transportation Systems Center to install truck side guards and enhanced mirrors on city-owned trucks in order to enhance safety for pedestrians and bicyclists traveling in Cambridge. The installation of additional blind spot mirrors, lenses, or cameras increases a driver’s field of view and situational awareness of bicyclists and pedestrians in the vicinity of a truck.

The City of Cambridge has been successfully installing side guards and mirrors on its own heavy-

duty vehicle fleet but these changes need to be undertaken on a wide-spread basis to include private fleets. We strongly urge NHTSA to advance these requirements as part of this new ruling.

- 58. Tom Maguire - Comment** In San Francisco from 2007–2011, large vehicles represented only 4% of all collisions involving a person walking or biking, but they accounted for 17% of fatalities. While 1.4% of all vehicle collisions with vulnerable road users resulted in fatalities, collisions between large vehicles saw a fatality rate that was twice as high and collisions with trucks were over 8 times more likely to result in death of a person walking or bicycling. Sideguards are used throughout Europe and Japan, and many North American cities have begun to require them as well. According to the Volpe Center, 556 people who were walking or bicycling were killed by side-impact crashes in a recent 5-year period. As I am sure you are aware, evaluations of the results of the UK's sideguard requirements which have been in place for years indicate a 61 percent decrease in bicyclist fatalities and 20 percent for pedestrian deaths. These outcomes point to a real, and meaningful, safety benefit from sideguards for our cities' streets, consistent with Secretary Foxx's Mayor's Challenge.
- 59. The League of American Bicyclists - Comment** In 2013, NHTSA data from the Fatality Analysis Reporting System shows that 78 bicyclist deaths were Heavy Truck related, representing slightly more than 10% of all bicyclist fatalities. According to the U.S. Department of Transportation Volpe Center, side guards led to a 61 percent reduction in bicyclist fatalities caused by side-impact collisions with large trucks when a nationwide side guard mandate was passed in the United Kingdom.
- 60. Texas Cotton Ginners' Association - Comment** While our specialty vehicles are specifically designed to transport seed cotton, they have several aspects in common with many other types of vehicles that this proposed rule will affect. The module truck bed, or module retriever bed, tilts in a manner that is somewhat similar to a standard dump truck, but with regards to the module truck, the rear of the truck bed floor must tip down to ground level. Furthermore, the floor of the truck is equipped with chains that are timed with the truck's wheels so that the truck will essentially slide under a large block of cotton and will pick the cotton up from the field. The rear of our trucks are specifically designed to perform this operation, so any changes to the lower rear section of our truck will have an effect on the truck's primary purpose. Cotton module truck beds are designed and are used for moving agricultural products from the farm to the first point of processing: as such, a significant portion of their use involves loading, transporting, and unloading seed cotton in areas other than on public highways. These Single-Unit Trucks (SUTs) are different from normal over-the-road trucks because these SUTs are seasonal, specifically designed for both on-road and off-road use and for use in fields, on farm roads, and in gin yards. While operating in rural areas, these trucks often have to negotiate uneven terrain, so clearances between the rear of the trucks and the ground may affect the ability of the trucks to reach their needed pickup points. This proposed rule would set a very specific set of dimensions to be applicable for bumpers on single-unit trucks. While it would seem fairly reasonable to have a standard that addresses typical over-the-road trucks, applying these same standards to the large variety of specialty SUTs will have many unforeseen consequences, and in many instances, may result in requirements that are simply impossible to achieve for certain vehicles. Modern module trucks are manufactured with a rear bumper, which is designed specifically to provide the type of protection that this proposed rule contemplates. The design of our rear bumper has been carefully developed to not only provide safety, but also to ensure that the primary purpose of the truck will not be compromised. The bumpers on cotton module trucks must be folded up into the bed before the truck can be loaded or unloaded. Anytime these trucks go off-road or over a terrace or embankment, a lower installed

bumper may possibly drag, in turn causing damage, or be pulled off the unit entirely. The proposed "cost-effectiveness" calculations indicate that this rule is certainly not cost-effective, and we believe that the costs are vastly under-stated for specialty units that are similar to ours. We have received preliminary estimates from manufacturers, and these estimates indicate that operation and maintenance expenses for this type of bumper alone could be on the order of \$4,000 per year. Much higher costs than originally estimated are involved when the vehicle bumper has to be raised or retracted to accomplish the main task or duty of this type of SUT. The initial cost of the vehicle bumper would likely be much more than the estimated operation and maintenance expenses because significant alterations would be needed for the truck. Moreover, any bumper installed on our trucks must be equipped with a fairly complex set of controls to allow the bumper to be folded back into the truck during loading and unloading. Initial costs are difficult to estimate, since a slight change in the height from the ground or rear of the unit will require extensive R&D in an area that is already well-developed for our specific vehicles. In summary, we believe that the "cost-effectiveness" calculations shown in the ANPR demonstrate that this proposed rule is not cost-effective. At the same time, we maintain that the costs are significantly under-stated in the notice. Requiring bumper specifications for all single-unit trucks will result in many unforeseen consequences that may result in a requirement for very complex and expensive systems. At a minimum, if this proposed rule moves forward, either exemptions or significant flexibility must be included in the allowable bumper configurations for single-unit trucks.

- 61. Andy Young, Comment** Industry equipment manufacturers state that rear guards cannot be placed on various construction related vehicles. These statements need to be met with skepticism. Many European CMVs already have rear-underride guard protection on trucks, like dump trucks or box trucks with lift gates. Please see the following photographs I took while I attended the Commercial Vehicle Show in Birmingham, England this past April, 2014. As evidenced by the photographs above, the U.S. lags behind other developed nations in providing meaningful rear impact protection. The photos above are just two examples of numerous applications allowing for rear impact protection and a lift gate or dump application. The argument that many SUTs need to have "good off-road mobility at construction sites" or "hitch connections" and therefore cannot have rear impact protection is likewise out-of-date thinking. Below, please see photographs from one vendor at the Commercial Motor Vehicle Show in Birmingham, England. While it is not readily apparent by these photographs, the vendor demonstrated how the rear impact protection guard can be adjusted up and down, as needed. Technology exists that debunks the argument that the rear impact guard would interfere with the work that the truck must perform. In this magnificent country of ours it is difficult to accept the fact that as a nation we are decades behind protecting our motorists from underride and/or override crash scenarios. The NHTSA has been slow to meaningfully regulate underride guard protection. As such, local governments, such as the City of Boston are passing ordinances requiring lateral protection devices on SUTs. Even the University of Washington announced that it is installing side guards on its campus fleet of SUTs. I implore the NHTSA to seriously consider meaningful passage of the pending proposal. We need to make sure that our citizens have the same protection as those in other nations. Sixty-two years is too long to wait to pass regulatory requirements that afford rear impact protection and other safety devices on single unit trucks.
- 62. ORAFOL Americas Inc. - Comments** ORAFOL Americas Inc has reviewed the estimated costs identified by the ANPRM and feel that they are accurate
- 63. Peter Kurtz -Comment** In this comment, I direct the attention of the NHTSA to the empirical evidence and assumptions used to calculate the effectiveness of CMVSS No. 223 guards. I believe

the NHTSA's analysis requires further empirical study.

Determining the Effectiveness of CMVSS No. 223 Guards Requires Further Study

Footnote 29 of the ANPRM notes that CMVSS No. 223 guards may provide protection in crashes above 56 km/h, but because NHTSA cannot currently quantify that potential benefit, any such benefits are elided from its calculations. But, without an understanding of that potential benefit (or its lack thereof), NHTSA's assumption that CMVSS No. 223 guards would be effective in only 30 percent of the target population crashes is not sufficiently concrete to provide an accurate picture of the benefits of the guards. **If, for example, contrary to the NHTSA's assumption, the guards are more efficacious, then guards may prevent more fatalities and injuries.**

To be sure, the ANPRM states that the NHTSA believes the CMVSS No. 223 guards would not be effective above 56 km/h because some crashes involve low overlap between vehicles and other unrelated circumstances may be at play (e.g. elderly occupants may be occupants or occupants may fail to use restraints). However, the NHTSA does not quantify the significance of these factors. Given the evidence presented in the ANPRM, we simply do not know how to weigh these concerns and the effect they may have on the number of prevented fatalities and injuries.

In addition, **I believe the NHTSA should expand the purview of the ANPRM to consider design changes to CMVSS No. 223 guards to improve their performance in low overlap and higher speed collisions.** The ANPRM takes as a matter of fact the performance limitations of the CMVSS No. 223 guards. **At a minimum, the NHTSA should seek comment on potential cost-effective, performance improvements to the design, with the objective of increasing their effectiveness.**

64. **Avery Dennison - Comment** The safety benefits of increased nighttime visibility through the application of retroreflective material have been validated in many studies, including those referenced in the proposal. These studies have shown that retroreflective materials, maintained to provide drivers with adequate levels of luminance, reduce multiple types of crashes.
65. **Student, Austin Brininger's - Comment** I believe the trucking industry should follow in the footsteps of Emilio Lopez, UPS' Global Fleet Safety Manager, who was recently quoted in an article by Truckinginfo as saying, "It's hard to put a ROI (return of investment) on saving someone's life." After reviewing recent studies on underride, researching previous studies, looking over police scene photographs and sketches, it can be noted that primarily, rear underride accidents occur at night where the driver of a small passenger vehicle cannot perceive a stopped vehicle. Similarly, side underride accidents occur in a similar manner. Usually, the driver of a small passenger vehicle cannot perceive that the CMV is turning out of a driveway, across the flow of traffic or making a U-turn. Drivers do not expect, therefore, they do not perceive a large CMV stopped or moving at an abnormally slow speed, particularly at night. Underride guards are fail-safe devices designed to prevent severe injuries or death. While accidents do happen, those accidents should not be a death sentence. The accident is not always the fault of the small passenger vehicle driver. There are conditions that lie out of the control of both commercial drivers and small passenger vehicles drivers including: a defective vehicle, a mechanical issue, dangerous weather conditions or poorly maintained roads. These conditions can all result in a catastrophic accident. The victims of these tragic accidents are disregarded as another statistic. Except for the family and friends of the deceased, no one shows any emotional ties. It is important to keep in mind that the victims of the accidents do not include just the deceased. Using the NHTSA's quote of 362 light vehicle fatalities a year into the rear of SUT and trailers, we can multiply that by the members in an average American family which was 3.13 in 2014. Assuming two parents and two step parents of the deceased, we can multiply the previous calculation by four. As a result, 4,532 people are affected by the light passenger vehicle fatalities caused by a collision into the rear of SUT and trailers annually. Please take a moment and reflect on how easy it can be to refer to a fellow human being as a number. As well as how easy it can be to have an acceptable value of death. Now, try and put faces to that number such as: friends, family or just people you work with. The NHTSA derived some of its statistics based on averages from the years 2008 and 2009. Those two years were some of the lowest in the past 15 years in terms of truck crashes as a percentage of the total automotive

crashes in the United States due to the Great Recession, 9% as opposed to 11-12%. However, since the Great Recession that percentage has slowly been on the rise as the economy continues to grow approaching 11% again. Please, consider the future as the economy continues to grow and truck traffic continues to increase nationally. **My biggest issue with the NHTSA ANPRM Docket No.: NHTSA-2015-0070 is the following quote, “Among the 122 fatalities examined in this review, 49 (40 percent) were exceedingly severe crashes that were not survivable.”** What if we stop believing traffic fatalities are inevitable and start believing that every traffic fatality is preventable? It may be a rather colossal way of thinking. Innovation can be accomplished by thinking big and starting small. Small steps are what eventually climbs the mountain. Introduce increased regulations on SUT in which the rear guard is stronger than FMVSS Nos. 223 and 224, potentially CMVSS No. 223 compliant guards. Use these regulations to collect real-world data from the increased structural rigidity to determine if the problem lies in the fact that the FMVSS Nos. 223 and 224 guards are not strong enough to begin with.

- 66. League of American Bicyclists - Comment** We commend NHTSA for advancing rules that will save lives by requiring rear impact guards and other safety features on single-unit trucks and tractor trailers. We respectfully urge NHTSA to include a side guard requirement and a requirement for enhanced mirrors in this proposed rulemaking.
- 67. Southeastern Cotton Ginners Association, Inc. - Comment** Our industry uses a highly specialized vehicle (straight truck with specialized bed) for moving seed cotton from the field to the gin which is the first point of processing of cotton. Our industry has developed and refined these cotton module trucks or retrievers over a long period of time and has been using them successfully for nearly 40 years. These trucks move through rough field conditions and highways alike and operate on a seasonal basis. The bed on a cotton module truck tilts to the ground to “scoop” up the cotton modules in the fields after harvest. Module truck manufacturers have developed specialized bumpers for these vehicles that provide a measure of safety and additional visibility to the module truck without hindering the off-road and functionality of the vehicle. These bumpers would likely not meet the proposed regulations and given the functional requirement of the truck, we’re not sure it would be possible to do so. We are commenting on the proposed rule so as to insure that adequate leeway is given to allow for these specialized trucks to be manufactured if this proposal is to move forward. The cost to the cotton farmers in our region and the US would be extreme if these new rules are adopted and these under-ride bumpers are mandated on our industry. If the NHTSA decides to advance this rule, we hope that you would take into consideration our highly specialized vehicles and the cost to cotton farmers across the cotton belt. We or any of our sister organizations would be more than willing to work with the NHTSA in better understanding our industry and cotton module trucks if it would help write a better rule than the one-size-fits-all proposal that is referenced here.
- 68. Anonymous** The commission should consider SUP rear guard exemptions based on likelihood of a crash above 35 mph. For the purposes of calculating rear guard costs and benefits, the NHTSA divided SUPs into classes based on weight, rather than considering the different functions of various SUPs and how those distinctions would impact the benefits conferred by the additional safety requirements under contemplation.

As an alternative to requiring rear guards on Class 3-8 SUTs, the NHTSA considered exempting Class 3 SUTs. By exempting Class 3 SUTs, the estimated cost per life saved would decrease from \$106.7-164.7 million to \$55.2-85.9 million. This calculation was done, however, holding the number of lives saved constant, even though the NHTSA offered no proof that none of the lives saved from requiring rear guards on Class 3-8 SUTs was conferred by the guards on Class 3 SUTs. This position is inherently illogical as Class 3 SUTs make up a large percentage of total SUTs. NHTSA-reported data show that 70 percent of fatal crashes were at speeds above 35 miles per hour. NHTSA showed no data implying a connection between vehicle weight and percentage of fatal PCI crashes. Therefore, rather than taking the weight of the vehicle into account, the NHTSA should consider whether the SUP would impact its likelihood of being involved in a crash at speeds above 35 miles per hour.

For example, it is much less likely that garbage trucks (which are heavy and thus tend to be Class 7 or 8 SUPs), which spend 70% of their operating time stopped (*see* Inform Inc., *Greening Garbage Trucks 4* (2003)) and are most often on residential streets, will be hit from behind at 35 miles per hour than it is for lighter Class 3 SUP delivery-trucks to be involved in a rear collision at high speeds, as delivery trucks more often travel on interstates where all cars have higher average speeds.

- 69. David Read - Comments** We support these important safety changes to trucks to help protect cyclists and pedestrians.
David Read

Chair, East Coast Greenway Alliance

70. **Rebekah Black - Comments** My younger sisters, AnnaLeah Karth and Mary Lydia Karth, were killed in a collision involving two trucks. If underride safety had been better, they may have lived. Please increase protection on single unit trucks by requiring adequate rear impact protection and equipment.