

RESOURCE INFORMATION
For Clarification of the
Roya, AnnaLeah & Mary Comprehensive Underride Protection Act of 2017
(RAM CUP Act of 2017)

1. **Insurance Institute for Highway Safety (IIHS), October 2014, Status Report on Underride**
 - This report includes two articles on the progress toward improving rear underride guard effectiveness. Here it is digitally:
<http://www.iihs.org/externaldata/srdata/docs/sr4907.pdf>
 - and here is the report on the first round of IIHS crash tests on the rear guards of 8 major trailer manufacturers (all of which met the current federal standard) – **March 2011**:
<http://trucksafety.org/wp-content/uploads/2011/05/sts11-sr4602.pdf>
 - This is the second round of tests reported in the **March 2013** IIHS Status Report, two months before our fatal underride crash on May 4, 2013:
<http://multivu.prnewswire.com/broadcast/60676/status-report.pdf>
 - **2016 Status Report on proposed Rear Guard Rulemaking**:
<http://www.iihs.org/iihs/sr/statusreport/article/51/2/3>

2. **Karth family crash photos**: First photo shows the aftermath with the rear of our Crown Vic under a Great Dane trailer (after 3 of us had been extricated with the Jaws of Life) on May 4, 2013. Second photo shows the rear underride guard which had failed and come off the rear of the trailer. More information here:
 - <http://annaleahmary.com/about/>
 - <https://www.youtube.com/watch?v=dGXR02wkjvM>
 - <http://annaleahmary.com/underride-guards/>

3. **Underride statistics and 1969 DOT document on side underride protection**
 - In the spring of 2016, I asked Terry Shelton at NHTSA to pull the statistics on truck underride fatalities. She was able to create a chart for those numbers from their FARS data during the time period from 1994-2014 (keeping in mind that these kinds of death are known to be underreported; underride is not included as an item on many state crash report forms). (<http://annaleahmary.com/2016/04/truck-underride-fatalities-chart-from-the-fars-1994-2014/>) Then I asked her to create a second chart, which breaks down those deaths into front, side (right and left) and rear underride fatalities. It is notable that there were almost as many (1534) side underride deaths as rear (1715). This, of course, does not include severe injuries which may have led to later deaths and/or life-changing victim health.
 - The **1969** DOT document is from a rear underride proposed rulemaking document, posted on the Federal Register, which indicated that DOT intended after further study to extend underride protection to the sides of large trucks. Digital copy can be found here:
<http://annaleahmary.com/2016/03/side-guards-the-original-intent-of-nhtsa-rulemakers-in-the-1969-nprm-docket-no-1-11-notice-2/>

4. **Industry article from April 1, 2013, *Underride: living on the edge*, Trailer/Body Builders, Bruce Sauer** Digital copy: <http://trailer-bodybuilders.com/archive/underride-living-edge>
Quote from that article: It's not clear how many lives could be saved by reducing the likelihood of underride along the edge of a trailer. According to the UMTRI study published in 2011, a total of 65 people were killed in 2008 in underride collisions so severe that the trailer penetrated the passenger compartment, even with an impact guard. Underride along the edge of the trailer probably would be a small subset of that total.

Note that the comment about the number of side underride deaths was pure speculation. NHTSA FARS statistics show that side underride deaths are **not** a small subset.

*But based on the results of the IIHS tests, it is possible to produce a guard that can prevent underride in the case of a severe offset, at least up to 35 mph. Manac's design, which features wider spaced vertical supports, did not allow underride in the third round of testing. We congratulate Manac. We also commend the IIHS for inviting trailer manufacturers and Trailer/Body Builders to witness these tests and to share the results. **Information such as this helps trailer manufacturers design and build safer trailers.***

5. **FARS Truck Underride Fatalities, 1994-2014** See explanation in number 3. The more detailed underride statistics chart is included here.
6. **Vision Zero & Underride Rulemaking** This is a short excerpt from our lengthy book which we delivered to DC in March 2016, with [over 20,000 petition signatures](#) asking for the application of Vision Zero principles to rulemaking. Until we, as a nation, do this, we will be allowing the continuation of many preventable deaths. See a digital copy of the complete book here: <http://annaleahmary.com/wordpress/wp-content/uploads/2016/04/Vision-Zero-Petition-Book-3rd-Edition.pdf> and a hard copy can be purchased here: <http://www.lulu.com/us/en/shop/marianne-karth/the-vision-zero-petition/paperback/product-22648853.html>
7. **DOT side guard recommendation in 1969** See number 3 for explanation.
8. **Side Guard Petition, February 2017** We launched an online petition calling for side guards, with these specific requests: In light of the **tragic** and **unnecessary** countless loss of lives which **delays** in underride prevention have already cost, as well as the continued tragic and preventable loss of life sure to occur if decisive action is not taken now, we are hereby petitioning:
 1. **President Trump** to immediately sign a Vision Zero Executive Order to authorize Vision Zero rulemaking policies which will impact all DOT safety regulations and save more lives;
 2. **DOT** to act immediately and apply Vision Zero rulemaking principles by crafting a truck underride final rule to include rear (both centered and offset) and side guards for both Single Unit Trucks and trailers;
 3. **Congress** to support a comprehensive and effective truck underride standard; and
 4. **Leaders in the trucking industry** to act immediately and support efforts to equip all trucks with effective underride protection.

9. **Side Guard Options, 2017** Finding a technologically possible, practical, and feasible solution to deadly side underride has been a challenge for decades. But engineers believe they have solutions. See more here:
 - <http://annaleahmary.com/2017/01/angelwing-side-guard-crash-test-a-success/>
 - From Aaron Kiefer's [Collision Safety Consulting: TrailerGuard System side crash test](#)
 - From Perry Ponder's: [AngelWing Side Underride Protection Device/Airflow Deflector](#)
 - <http://annaleahmary.com/2017/02/side-underride-problem-solutions-featured-on-the-today-show/>
 - Both of these inventions have undergone crash tests and have future crash tests scheduled at vehicle research centers. It is possible that interested parties could view these crash tests if arranged in advance.
 - In addition, other side guard patents can be found online. I recently found this one. <https://www.google.com/patents/US9487171>
 - SIDE GUARD POSTS: <http://annaleahmary.com/tag/side-guards/>

10. **Truck Trailer Manufacturers Association (TTMA) letter to NHTSA on side guards, May 13, 2016** I included this letter because, although I do not agree with all of their conclusions or statements, I wanted to provide some history of the controversial issue and make note of TTMA's closing statement: *TTMA would support the implementation of side impact guards if they ever become justified and technologically feasible. We continue to support the NHTSA review of Petitioners' requests and stand ready to partner in the development of justified and feasible designs if they possibly emerge. Sincerely, Jeffrey M. Siims, President* <http://annaleahmary.com/2016/05/truck-trailer-manufacturers-assn-reminds-nhtsa-side-guards-are-not-cost-effective-says-who/>

11. **A bereaved dad's letters to the trucking industry** Here are some examples of Jerry Karth's letters to the trucking industry informing them of the results of the IIHS research studies and an appeal to voluntarily raise the standards and seek out safer trailers has reportedly made an impact. <http://annaleahmary.com/2016/05/a-grieving-dad-got-the-attention-of-the-trucking-industry-made-a-difference/> The trucking industry has been demonstrating an openness to improve safety. Let's strike while the iron is hot and proceed with a logical, comprehensive strategy to improve safety collaboratively. Look at the advances in medical research when it is not done simply in silos. And at least one manufacturer has been able to provide the improved rear guard on all new trailers at no added cost or weight penalty to their customers. <http://annaleahmary.com/2016/12/stoughton-improved-underride-guards-standard-at-no-cost-or-weight-penalty/>

12. **New rear underride guard proven successful in a real-life crash, March 2, 2017** I was excited when Stoughton Trailers contacted me recently to let me know that they had found out that one of their new trailers with their new stronger guard (successfully tested on May 5, 2016 at IIHS) had been in a real-life crash and the driver had survived! How exciting! <http://annaleahmary.com/2017/03/new-stoughton-rear-underride-guard-proven-successful-in-real-life-crash-driver-survives/>

13. **Super Truck project & the 21st Century Truck Partnership** These articles about the Super Truck project demonstrate that collaboration can successfully improve trucks – in this case, fuel efficiency. It should be noted that the Wabash trailer involved in the project had a full-length skirt which provided fuel savings. This same skirt could be adapted with the technology invented by Aaron Kiefer in the creation of an innovative side/rear guard which can provide greater underride protection on both new and existing trailers. Kill two birds with one stone! It would be negligent to not take advantage of this possibility. It could mean the difference between life and death for thousands of people. Time translates into preventable deaths. <http://annaleahmary.com/2017/02/perfect-opportunity-to-transform-supertruck-into-an-esv-to-advance-underride-protection-dot-doe/>
14. **Canadian Transportation Equipment Association (CTEA) generic guard** At one time Canada worked on a generic rear guard which could be made available for smaller manufacturers. We should keep this approach/strategy in mind as one possible way to save the industry costs and time. <http://trailer-bodybuilders.com/archive/ctea-develops-rear-impact-guard>
15. **Comprehensive Underride Protection Recommendation & Rulemaking*** For numerous reasons, it makes more sense to address the underride problem comprehensively, treating the tractor-trailer as a unit with the knowledge that underride crashes occur on every side of the truck. The industry has shown through the 21st Century Truck Partnership and the Super Truck Project that it can work collaboratively and it is logical to do so if we are genuinely motivated to improve safety as quickly and efficiently as possible. A comprehensive strategy would include these elements:
 - Front overrun protection (not currently mandated)
 - Rear underride protection (in need of updating)
 - Side underride protection (not currently mandated)
 - Single Unit Trucks <http://annaleahmary.com/2015/07/some-facts-on-single-unit-truck-underride-crashes-from-the-ntsb/> (not currently mandated)
 - Enforcement of Maintenance Requirements (not currently adequately enforced)
 - Retrofitting of existing trailers (not mandated)
 - Identification of outer limits of underride protection (**not known**)
16. **Underride Guard Maintenance & Retrofitting of Existing Trailers** FMCSA requires guards to be kept in like new condition but this is clearly not being enforced. In addition, at least two manufacturers with improved rear guards have retrofit kits at a reasonable cost (Stoughton, \$500-600). <http://annaleahmary.com/2017/03/stoughton-offers-retrofit-kit-for-new-rear-impact-guard/> Maintenance Guidelines: <http://annaleahmary.com/wordpress/wp-content/uploads/2016/05/RP-732.pdf> **At minimum, FMCSA should require that rear guards needing maintenance should be replaced with a stronger guard, underride inspection should be included on annual inspection forms and officials trained to inspect them, and trucks with guards in need of repair should be fined and receive an OOS violation—taken off of the road until the guard is repaired (with updated guard).**
17. **Research for Identification of Outer Limits of Underride Protection** Currently, the outer limits of underride protection have not been tested or mandated for. This needs to be addressed as well and there are engineers who have proposed research opportunities to do so.

- German engineer http://annaleahmary.com/wordpress/wp-content/uploads/2016/04/Flyer-Truck-RUP-2015_fb1-Detlef-Alwes.pdf
- http://annaleahmary.com/wordpress/wp-content/uploads/2016/04/Detlef-Alwes-Underrun-Protection-System-Presentation1_2016-1.pdf
- U. S. engineer <http://annaleahmary.com/wordpress/wp-content/uploads/2015/07/Development-of-Trailer-Underride-Preventive-Measures.pdf>
- <http://annaleahmary.com/tag/dean-sicking/>
- Australia has issued a new rear underride guard standard requiring crash tests at 43.5 mph compared to the U.S. Current standard at 30 mph. <http://annaleahmary.com/2017/03/australian-engineer-comments-on-u-s-underride-protection/>

18. **IIHS Toughguard award for trailer manufacturer upgrade of rear underride guard** On March 1, 2017, IIHS recognized the 5 trailer manufacturers who have voluntarily improved their rear guards. Let's take advantage of this cooperative spirit and craft a bill/rule/standard which would guide them into comprehensive underride protection on all of their vehicles now and into the future. <http://annaleahmary.com/2017/03/great-dane-trailer-crash-test-at-iihs-receives-toughguard-award-for-improved-rear-underride-guard/>

This post contains additional useful information: <http://annaleahmary.com/2017/03/heading-for-dc-to-discuss-the-need-for-the-best-possible-underride-protection-on-all-trucks/>

Note: “As of May 2015, over 90.0% of players in the United States long-distance freight trucking industry are **owner-operators**. Therefore, even the top corporate operators only hold a small share of the total market. According to the industry market research firm **IBISWorld**, **J.B. Hunt Transport Services** holds an estimated 2.5% market share, **YRC Worldwide** holds 1.8%, **FedEx** holds 1.6%, **United Parcel Service of America** owns 1.5%, and **Con-way** holds 1.4% “ https://en.wikipedia.org/wiki/Trucking_industry_in_the_United_States

How many trucks are on the road?

- “Estimates of **15.5 million trucks operate in the U.S.**. Of this figure **2 million are tractor trailers**. “ <http://www.truckinfo.net/trucking/stats.htm>

How many trailers are manufactured each year? “2016 Top 25 North American Truck-Trailer & Chassis OEMs”:

Rank	Manufacturer	2016	2015
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Totals:	314,966	337,861
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<http://trailer-bodybuilders.com/trailer-output/2016-trailer-production-figures-table>

FMVSS No. 223 Rear Impact Guards and FMVSS No. 224 Rear Impact Protection, Preliminary Regulatory Evaluation, September 2015: http://annaleahmary.com/wordpress/wp-content/uploads/2016/06/Preliminary_Regulatory_Evaluation_-_Re_NPRM_published_Dec_16_2015-1.pdf

* **This comprehensive rule** could legitimately be initiated in accordance with President Trump's 2017 Executive Order requiring that for every new rule, two rules be cut. Upon release of a Comprehensive Underride Protection Rule, the two current rear impact protection rules would become obsolete.

Additionally, the case could be made that the rule to be crafted as a result of the Royce, AnnaLeah and Mary Comprehensive Underride Protection Act of 2017 provides a logical response to the feedback received through Public Comments on the NPRM for rear underride protection on trailers and the ANPRM for Single Unit Trucks. As such, it could naturally be promulgated through a Supplemental Notice of Proposed RuleMaking. Although that strategy, by itself, would not provide sufficient guidance for rulemaking deadlines.

There are many strategies which could be taken to achieve the BEST POSSIBLE UNDERRIDE PROTECTION. It is our aim to push on many fronts for these safety measures which are long-owedue.

March 20, 2017, Marianne Karth