

## A Bill

**WHEREAS, road users – pedestrians, cyclists, motorcyclists, and passenger vehicles – are at risk of death and/or serious injury from riding under Commercial Motor Vehicles,**

5 BE IT ENACTED BY THE CONGRESS HERE ASSEMBLED THAT:

### **SECTION 1. SHORT TITLE**

This Act may be cited as the “Roya, AnnaLeah and Mary Comprehensive Underride Protection Act of 2017” or the “RAM CUP Act of 2017”

10 **SECTION 2. UNDERRIDE PROTECTION STANDARDS FOR COMMERCIAL MOTOR VEHICLES** (CFR >Title 49>Subtitle B>Chapter V>Part 571>Subpart B)

15 (a) Underride Protection means the equipment or technology which is installed onto or built into a Commercial Motor Vehicle to prevent road users from riding underneath the Commercial Motor Vehicle so that death and/or severe injuries occur.

(b) CMV means Commercial Motor Vehicles or large trucks such as tractor-trailers or Single Unit Trucks.

20 (c) NHTSA Administrator means the Administrator of the National Highway Traffic Safety Administration Administrator.

(d) FMCSA Administrator means the Administrator of the Federal Motor Carrier Safety Administration.

(e) IIHS means the Insurance Institute for Highway Safety.

25 (f) Side Guard means equipment or technology which is designed to prevent pedestrians, cyclists, motorcyclists, and passenger vehicles from going under the sides of large trucks.

(g) SUTs means Single Unit Trucks

**SECTION 3.** The National Highway Traffic Safety Administration (NHTSA) shall oversee the administration of the underride protection standards. The  
30 Federal Motor Carrier Safety Administration (FMCSA) shall oversee the

enforcement of maintenance of the underride protection.

**(a) REAR UNDERRIDE PROTECTION ON SEMI-TRAILERS**

35 (1) The revised FMVSS 223 shall require guards that are strong enough to  
allow the inherent crashworthiness of modern passenger vehicles to be  
realized. Specifically, guards shall prevent underride and occupant  
40 compartment intrusion when struck by a typical passenger vehicle with an  
impact of at least 35 mph with overlaps ranging from 30 percent of the  
passenger vehicle's width to full overlap between passenger vehicle and  
truck trailer. Tests of trailers from Great Dane, Manac, Stoughton,  
Vanguard, and Wabash illustrate the practicability of providing the level of  
underride protection described above.

45 (2) The underride guard and trailer structure are a system. As such,  
compliance testing of rear impact guard strength shall be conducted  
with the guard attached to the trailers and/or a portion of it that  
includes all structures to which the guard attaches.

(3) It was hoped that it would be possible to prescribe a regulatory test  
procedure based on quasi-static loading and minimum force levels that would  
lead to guards capable of providing the same or better level of underride  
protection as demonstrated by guards on Great Dane, Manac, Stoughton,  
50 Vanguard and Wabash trailers. However, study of this issue has shown that  
such a process is:

a) not easily done; and b) would not definitively provide a valid comparison.

(4) Therefore, the revised FMVSS 223 shall require dynamic crash testing  
of any new guard design to verify that it meets upgraded requirements.

55 (5) In order to create a standard which is attainable by every trailer  
manufacturer – both the large ones, who would have the option of designing  
their own guard, as well as the small manufacturers, who might find it  
financially difficult to design their own guard, NHTSA shall encourage the  
development of a generic rear underride guard (as was done by the Canadian

60 Transportation Equipment Association [CTEA] in 2000. This process shall be completed prior to an implementation for the updated rear guard rule.

(6) To the extent possible, the 21<sup>st</sup> Century Truck Partnership shall include safety considerations in their communications and collaborative efforts.

65 (7) Because the research undertaken by the IIHS has shown that improved guards are both possible and more effective, this rulemaking shall be moved forward as quickly as possible to save lives.

### **(b) UNDERRIDE PROTECTION ON SINGLE UNIT TRUCKS**

70 (1) People die every year from preventable underride crashes with Single Unit Trucks.

(2) No meaningful regulatory change has occurred since 1953 to address this problem.

75 (3) NHTSA's cost/benefit analysis, as outlined in the ANPRM, issued in July 2015, is flawed. If the best possible underride protection is required, the cost will not be prohibitive, and the benefits of saved lives will be beyond measure.

(4) The rulemaking process for underride protection on Single Unit Trucks shall be included in the Comprehensive Underride Protection Rule.

(5) NHTSA shall require SUTs to have the same underride protection which is required of semitrailers.

80 (6) If a company manufactures a type of SUT which they can show does not allow underride (under the required conditions) – even without an underride guard per se, then they may ask NHTSA to review their circumstances for a potential exemption.

### **(c) UNDERRIDE PROTECTION ON THE SIDES OF LARGE TRUCKS**

85 (1) Since 1969, DOT has been aware of the problem of side underride fatalities and has intended to extend underride protection to the sides of large trucks.

(2) NHTSA's own FARS data documents the problem of 1534 side underride fatalities between 1994 and 2014 (1715 rear underride fatalities).

90 (3) Crash reconstructionists are well aware of the side underride problem based on their own crash investigations.

(4) Engineers have recently designed Side Guards and proven their effectiveness in crash tests. Plans are underway for testing by official vehicle research centers in the Spring of 2017.

95 (5) Thus, there will soon be viable Side Guard options on the market. It is anticipated that other market-driven alternatives would quickly become available and a rulemaking on Side Guards would obviously hasten that process and contribute to preventing tragic deaths which would otherwise occur due to delays in the implementation of needed underride protection.

100 (6) Therefore, NHTSA shall include Side Guard Rulemaking in this Comprehensive Underride Protection Rule in order to extend underride protection to the sides of semi-trailers and SUTs.

(7) To the extent possible, the NHTSA shall examine available data on Side Guard crash testing and also immediately issue a Request for Proposals (RFP) to establish the appropriateness of the following recommended Side Guard specifications:

**(A) Guard Size, Shape, and Position Requirements:**

110 (1) Must cover and protect from pedestrian, cyclist, and passenger vehicle intrusion, at minimum, the area between a semitrailer's landing gear and the forward edge of the rear tires when the semitrailer axle(s) are positioned in their furthest forward position.

(2) Must cover and protect from pedestrian, cyclist, and passenger vehicle intrusion, at minimum, the area between a single unit truck's forward edge of the cargo carrying portion rearward to the forward edge of the rear wheels.

115 (3) Must be constructed to direct a vulnerable road user (VRU), such as a cyclist or pedestrian, out and away from the underside of the vehicle in order to prevent contact with the rear tires.

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(4) Must be composed of a smooth, flat exterior surface that cannot snag, catch, or entangle a vulnerable road user such as a cyclist or pedestrian.

(5) Must be positioned vertically from the lower edge of the trailer/truck box to within 1.25 feet of the roadway surface.

(6) Must not extend the length or width of a vehicle beyond the current 3" safety equipment tolerance.

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**(B) Guard Strength Requirements:**

Must be sufficiently strong to prevent a mid-sized passenger sedan (3,000 lb nominal weight) traveling at 35 mph from intruding beneath the truck/trailer structure sufficiently to create measurable passenger compartment intrusion (PCI).

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**(C) Guard Certification:**

(1) VRU performance shall be certified by snag/drag tests to simulate cyclist and pedestrian encounters in an urban setting.

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(2) Vehicle performance shall be certified via 35 mph crash tests at 90 degree and 45 degree approach angles with respect to the trailer body.

**(d) UNDERRIDE PROTECTION ON THE FRONT OF LARGE TRUCKS**

Include front override protection in conformance with the following specifications:

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(1) An EU requirement was introduced in 2000 based on ECE Regulation 93 requiring mandatory rigid front underrun protection defining a rigid front underrun protection system for trucks with a gross weight over 3.5 tonnes Directive 2000/40/EEC. Studies performed by EEVC WG 14 have shown that passenger cars can 'survive' a frontal truck collision with a relative speed of 75 km/h if the truck is equipped with an energy absorbing

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underrun protection system. Furthermore, these systems could reduce about 1,176 deaths and 23,660 seriously injured car occupants in Europe per year. Research shows that the benefits of a mandatory specification for energy absorbing front underrun protection would exceed the costs, even if the safety effect of these measures was as low as 5%. European Commission; Front Underrun Protection Systems [Note: 75 kmh = 46.6028 mph]

- (2) Front guards must have 3 levels of resistance; soft front for pedestrians and cyclists, middle area must be softer than the partner vehicle in crashes and able to absorb energy such as through crush, and rear area must be strong and stiff enough to resist underride and rotate high-speed vehicles away from the truck. Extend the front guard from the truck 600 mm (2 feet) to give room for a 500 mm (1.6 feet) radius curve to deflect crash partners including VRU and cars. The extra 600 mm should give 102 km/h or (63 mph) of protection which would exceed a general goal of 60 mph (100 km/h) -- an average speed for highway crashes in the real world.
- (3) NHTSA shall immediately issue an RFP to identify the appropriate requirements for a front underrun protection standard.

**(e) PERIODIC REVIEW OF UNDERRIDE STANDARDS**

(1) In light of the long-term awareness of underride deaths as well as the advancement of technology along with research for viable solutions, NHTSA shall immediately issue a Request for Proposals (RFP) and fund the research and design of a high capacity rear underride barrier prototype for the development of a generic guard which would demonstrate successful prevention of underride and protection against severe passenger injury at high impact capacity (62 mph) in two categories:

- (A) with energy absorption, including solutions which have been proposed internationally —both in Germany (Energy absorbing underrun protection crash structures on commercial vehicles have to

become standard, as they are on passenger cars for decades). and  
Australia (through the use of inflatable large airbags on the front and  
rear of trucks), and in the United States (one example of this is a  
proposal which has been submitted for the development of an energy  
absorption solution) to significantly increase the survivable impact  
speeds.

(B) without energy absorption.

(2) The results of this research shall then be evaluated and the  
underride standards shall be upgraded as appropriate to provide the  
best probable underride protection.

(3) Thereafter, conduct a periodic review of underride standards every  
five years in order to assess the need for changes in conjunction with  
advancements in technology and update the standards accordingly.

(4) Additionally, this periodic review shall include appropriate cross-  
border collaboration with Transport of Canada.

**(f) TRAILER REAR UNDERRIDE GUARD REPAIR GUIDELINES  
SHOULD BE PROMULGATED AND ENFORCED BY FMCSA**

(1) FMCSR 303.86, which became effective on October 1, 1999, requires that  
equipment users maintain the underride guard in a close-to-like new  
condition. This, in part, means that it shall not deviate improperly  
from the dimensions given.

(2) Rear impact guards shall be regularly inspected for cracked welds, cracked or  
fractured vertical members, cuts and tears in any member and for  
dimensional integrity.

(3) Trailer manufacturers shall provide Retrofit Kits, which meet the highest  
standard of underride protection. These shall be installed on trucks with rear  
underride guards in need of repair. The TTMA shall be encouraged to  
provide a Generic Retrofit Kit.

205 (4) The FMCSA shall enforce their requirement for the proper maintenance of rear underride guards, FMCSR 393.86 by,

(A) The provision of procedures for training and certification of both public and private sector safety inspectors in thorough inspection of underride equipment.

210 (B) The utilization of truck underride guard inspection forms and annual tags for verification of underride equipment safety inspection—based on updated RP 732.

(C) The administration of a system for reporting violations of this requirement, including:

215 (1) a digital photo taken of the guard at the time of inspection,

(2) a mandate/provision to take the truck off the road and designate it as Out of Service (OOS) until the guard is properly repaired,

(3) and a process for collection of fines.

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#### **SECTION 4. RULEMAKING.----**

(a) IN GENERAL.---- Not later than 6 months after the date of the enactment of this Act, the Administrators, after consultation with the Secretary of Transportation and the Office of Management and Budget, shall issue a Notice of Proposed Rulemaking to carry out the requirements of the “Roya, AnnaLeah and Mary Comprehensive Underride Protection Act of 2017” as delineated in CFR >Title 49>Subtitle B>Chapter V>Part 571>Subpart B>\_\_\_\_\_.

230 **(B) FINAL REGULATIONS.-----** Not later than 2 years after the date of the enactment of this Act, the Administration with the Secretary of Transportation, shall issue final regulations to carry out the requirements of the “Roya, AnnaLeah and Mary Comprehensive Underride Protection Act of 2017” as delineated in CFR >Title



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(c) UPDATES.----- Not later than 5 years after the final regulations are issued pursuant to paragraph (2) and not less than once every 5 years thereafter the Administrators, after consultation with the Secretary of Transportation, shall-----

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**(1) review the regulations issued** pursuant to paragraph (b); and  
(2) update such regulation, as necessary.

**SECTION 5.** All laws in conflict with this legislation are hereby declared null and void. Such laws include [FMVSS 223](#) and [FMVSS 224](#).

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**DRAFT 8, March 20, 2017, 9:30 a.m.**