

**AnnaLeah & Mary for Truck Safety
is seeking funding for these
Side Guard Research Projects**

Action #1: Side Underride Prevention Research

The tragic Tesla fatal crash on May 7, 2016, highlights a real and present highway danger -- cars sliding underneath large trucks when vehicles collide. No matter what caused the Tesla crash, the driver might have lived if the truck had had **side guards**.

U.S. & Canadian safety advocates are calling for an end to preventable truck underride tragedies. Hundreds of people die every year when pedestrians, cyclists, motorcyclists, and passenger vehicles go underneath trucks.

It can happen to anyone -- even if their car has a 5-Star Crash Rating. It can happen anywhere. It happened to AnnaLeah (17) & Mary Karth (13), when their car went under the rear of a semi-trailer on May 4, 2013, in Georgia. And it happened to Jessica Holman-Price (21) when she went under the side of a truck as a pedestrian on December 19, 2005, in Canada.

U.S. regulators have debated for decades about how to stop the tragedy of underride deaths – including, **since 1969**, the possibility of requiring underride protection to be added to the **sides** of large trucks. But they have *not* done so, even though engineers have already found ways to solve this problem.

The work that we have done has actually put us into contact with others working on the underride guards. One such person is [Aaron Kiefer](#) who is currently an accident research specialist in North Carolina. He has designed a guard that can be retro-fitted onto current truck guards to improve their strength and reduce underride. He has crash tested it successfully and now needs to do further research to refine the design to be ready for the industry.

This will include the following expenses:

- aluminum extrusions for the rear reinforcement attachments (\$30,000)
- and an aluminum side guard slide to allow for truck driver functionality in pre-trip inspections of tires (\$20,000);
- development of a prototype for a system at the trailer front, which will allow the side guard to flare up 20-30 degrees when the air brakes are turned off, and back down when the brakes are turned on (\$23,000) – again to aid in pre-trip inspections and changing tires;
- and crash testing to validate and verify the effectiveness of the TrailerGuard System (\$50,000).
- **Total Costs for Side Guard Research & Development = \$123,000** – a project and cost which is currently not being taken up by the trucking industry.

When Aaron's work is completed, the underride protection system would be ready for a manufacturer to produce and sell to the trucking industry.

Action #2: A collision between the back of a commercial motor vehicle and a passenger vehicle too often results in underride in which the occupants of the smaller vehicle experience horrific injuries usually leading to tragic death. For too many decades, the question of under what circumstances this can be prevented has been left unanswered and the industry solutions have been mostly weak and ineffective.

While the crash testing conducted by the IIHS and our own efforts in recent years to change this have brought about some improvement in rear underride guards, the question has still not been definitively addressed. As Bill Graves, the former president of the American Trucking Associations (ATA) said in a 2011 ABC article,

“It doesn't provide the kind of underguard protection that clearly is called for. . . ! Graves said, though, that the right barrier design is a 'complicated puzzle to solve. . . That's the question the federal government has been wrestling now for many years, is what's the strength we want,' he said. 'What's too much? And what's not enough?’”

(<http://abcnews.go.com/Business/road-warning-death-big-rig-guillotine/story?id=13026797> Lisa Stark, March 1, 2011)

Because side underride has received less countermeasure effort, and is not currently being addressed by the trailer manufacturing industry itself, **this project will also organize a collegiate design competition to challenge engineering students to design affordable and effective side underride protection for large trucks.**

Collaborative, interdisciplinary research teams from various universities will identify the outer limits of effective side underride protection, i.e., ascertain the optimum levels of energy absorption and rigidity both to prevent underride and also to result in survivable (and without life-altering injuries) deceleration forces at the maximum speed possible (at various angles).

Two student teams (up to ten students on each team) will be selected by IIHS to receive funding from the grant for their project expenses (up to \$15,000, as needed). The two teams will each meet with IIHS early in the process to define the single demonstration crash test that will be performed on the winning design.

The two teams will, also, be expected to provide four written reports (mid-Fall Semester, end of Fall Semester, mid-Spring Semester, and end of academic year) – including a report on their design's capabilities using computer simulation. They will also be expected to make a final group presentation at an event scheduled at the IIHS Vehicle Research Center in Ruckersville, Virginia, at the end of the academic year.

One team's project will be selected, by a group of 6 judges, for crash testing at this event. The Traffic Safety Ombudsman will oversee this project and recruit 5 judges in addition to the judge from the IIHS.

In addition, each team must include students and/or consult with professionals in relevant fields of study/research/expertise, including but not limited to mechanical engineering, biomedical engineering, injury prevention, collision reconstruction, trailer manufacturing, marketing, and law (to do a law review of the cost/benefit analysis in underide rulemaking as well as manufacturer liability issues in this matter).

(See the excellent work done by a Virginia Tech Senior Design Team in the 2015/16 academic year: <http://tinyurl.com/j9rl3kw>)