CENTER FOR AUTO SAFETY

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Lisa Jackson, Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington DC 20460

Ronald Medford, Acting Deputy Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE
Washington DC 20590

Re: Proposed Light-Duty Vehicle Greenhouse Gas Emission and Corporate Average Fuel Economy Standards, Doc. Nos.EPA-HQ-OAR-2009-0472 & NHTSA-2009-0059 (74 FR 49454, Sept. 28, 2009).

Dear Administrator Jackson and Acting Deputy Administrator Medford:

Claims have been put forward for decades that automotive fuel economy standards will degrade safety. In particular, the National Highway Traffic Safety Administration (NHTSA) has claimed that if vehicle weight and size are reduced as a major tactic to increase automotive fuel economy, it is likely to increase road crash casualties. A number of papers and reports have been written presenting various analyses claiming to show that this is or is not so. Most of these claims depend on analyses of the performance of older vehicles on the road long before the papers were written and whose claims did not hold up when newer vehicles meeting increased CAFÉ standards hit the road.

Despite these claims, over the last three decades, highway fatalities decreased nearly 20% while travel and new passenger car fuel economy has doubled since the Energy Policy and Conservation Act (EPCA) was passed in 1975. This is a reduction of 59% in fatalities per mile traveled (54% per registered vehicle) over thirty years. During the same period, pedestrian fatalities went down by one-third, but motorcycle fatalities increased by 10%. Passenger car occupant fatalities were down 40% despite the number of cars increasing by one-third. The following table shows some basic motor vehicle fleet and crash statistics.

Some Basic U.S. Motor Vehicle Statistics	**1979**	**2007**
Registered Motor Vehicles (Percent Passenger Cars/Percent LTVs) (# Passenger Cars/# LTVs)	144 Million (M) (72%/20%) 104 M/28 M	256 Million (M) (58%/42%) 138 M/101 M
Vehicle Miles Traveled	1.5 billion	3.0 billion
People Killed as Passenger Car Occupants	27,788	16,520
People Killed as Light Truck and Van Occupants	7,119	12,413
Pedestrians and Pedalcyclists Killed	9,021	5,352
Heavy Truck (> 10,000 lbs.) Occupants Killed	1,087	802
Motorcycle Riders Killed	4,679	5,154
Traffic Fatalities	51,093	41,059
Fatality Rate per 100 Million Vehicle Miles	3.3	1.36
Fatality Rate per 100,000 Registered Vehicles	34.79	16.05

The reduction in light vehicle occupant fatalities is a result of a number of factors including a substantial increase in safety belt use, the almost universal installation of airbags in light motor vehicles, the implementation of the dynamic side impact standard, more stringent driving licensing laws and increased public reliance on vehicle crash safety ratings. Rollover fatalities have decreased modestly in passenger cars but have increased dramatically in pickup trucks and SUVs, consistent with the comparative growth in the number of these vehicles in the fleet and their increased rollover propensity. Overall, fatalities in rollovers of pickups and SUVs have more than doubled.

Vehicles built after the 2012-2016 model year fuel economy standards become effective will be far different from present vehicles in various ways.

1 The number of truck based vehicles used as private passenger cars (SUVs based on truck chassis and pickups) will almost certainly diminish. These vehicles have presented the greatest threat to safety both to their own occupants (in rollovers) and to occupants of other vehicles and pedestrians so that their disappearance in non-commercial, non-farm use will have a positive impact on safety of at least 1,000 fatalities annually. The trend against light trucks being used as passenger car substitutes could be accelerated by applying all passenger car standards equally to light trucks including bumper performance and roof crush resistance.
2 Future vehicles will comply with new standards for ESC, roof crush resistance, and control of occupant ejection. These standards will substantially reduce the potential for single vehicle crashes (including rollovers) and for injuries in such crashes.
3 New applications of high strength steels, laser welding, advanced adhesives, and non-ferrous materials (aluminum and plastics) will result in major improvements in structural performance – occupant compartment integrity and crash energy management – with reduced vehicle weight.
4 A major consequence of the new safety standards will be a dramatic reduction in rollover casualties. Until recently, NHTSA had no significant standards affecting rollover safety. Rollover fatalities increased dramatically as light trucks were increasingly used as substitutes for passenger cars in the 1980s and 1990s. We estimate that rollover fatalities will be reduced from the current level of more than 10,000 per year to fewer than 5,000 as a consequence of the new standards. This factor alone would substantially reduce the consequence of weight reduction found by Kahane and others.

Furthermore, an untapped potential to improve safety could come from having effective safety belt use reminders in new vehicles. NHTSA could encourage such installation by reducing the number of “stars” earned by a vehicle in its New Car Assessment Program (NCAP) if the vehicle does not have such a use reminder. This would impose no new regulatory requirements and would be justified by the fact that all NCAP test results are based on having restrained occupants. It is inconsistent for NHTSA to be concerned about the safety impact of the fuel economy standards if it is not equally concerned about safety belt use and willing to go beyond its education and enforcement programs to ensure increased belt use.

It is well-known that NHTSA’s estimates of safety belt use do not reflect the much lower use in potentially fatal crashes (crashes where an occupant would be killed if unbelted but would survive if belted). Thus, effective belt use reminders would have the potential to save many thousands of lives as well as to ensure compliance with state belt use laws.

The principle flaws in the argument that overall weight reduction of the fleet will degrade safety are:

1 Generalizing from the fact that small vehicles previously on the road are less safe than larger ones (all other things being equal) is faulty logic. If all vehicles are equally reduced in weight, there will be no change in momentum transfer or delta V in crashes between vehicles. The design of future vehicles will be such that a newer, lighter vehicle of one class will not be the same as the design of a lighter vehicle of another class in the past.

2 Smaller cars have traditionally been cheaper, having less sophisticated safety design and engineering, fewer safety features, and are likely to be driven by people who have poor safety records; so that analyses comparing the performance of lighter vehicles are confounded by these factors. Studies such as the Kahane studies, conducted six to twelve years ago, are based on the performance of a vehicle fleet built between the mid-1980s and mid-1990s: vehicles that are not at all reflective of the performance of vehicles that will be built 20 to 30 years later when the 2011-16 standards take effect.

3 The number of variables affecting vehicle safety is such that it may be nearly impossible to resolve this question for future vehicles based on the performance of vehicles actually in use. Instead of attempting to make such predictions, NHTSA should concentrate on finding ways to improve safety generally.

The argument that weight reduction to enhance fuel economy will increase casualties has been put forth primarily by the domestic automobile manufacturers as an argument against imposing more stringent fuel economy standards. These companies might have the moral authority to make the argument if they had a history of taking all reasonable steps to make their products as safe as they could be within the economic constraints they face. In fact, they have generally been reluctant to incorporate available safety features and designs and have often opposed attempts to either require such features through regulation or encourage them through consumer information programs.

For example:

1 After initial enthusiasm for air bags, the domestic industry strongly opposed attempts to make air bags generally available to the public until decisions by the Supreme Court, the Secretary of Transportation, and finally the Congress led to their universal adoption.

2 Manufacturers have refused to make vehicle roofs sufficiently strong to protect occupants in rollovers that produce one third of all vehicle occupant fatalities.

3 Manufacturers first insisted on the safety belt interlock (as an alternative to air bags) and then sabotaged the interlock by the very poor quality and reliability of safety belts and interlock systems. They have consistently opposed most attempts to provide highly effective safety belt use reminders despite laws in 49 of the 50 states requiring belt use.

4 Manufacturers exploited the substantially lower regulatory requirements for light trucks[*] and by enthusiastically promoting SUVs and pickups as passenger car substitutes despite the fact that they had substantially higher rollover casualty rates and increased casualties in passenger cars involved in collisions with them. This led to an increase of up to ten percent in light vehicle occupant casualties.

5 Cost cutting and poor quality tires led to several hundred deaths in Ford Explorers with Firestone tires when failures of these tires precipitated rollovers.

[*] Requirements for fuel economy, emissions, safety, and damageability were all much more lenient for light trucks and vans (including SUVs) than for passenger cars in the 1970s and 1980s. The difference has been estimated to reduce the cost of producing a light truck in comparison with an equivalent passenger car by over $5,000. Many differences in regulatory requirements remain to this day.

Manufacturers have enthusiastically used newer technologies that improve efficiency to make dramatic increases in vehicle horsepower and acceleration capability rather than to improve vehicle fuel economy beyond the level reached 25 years ago. Furthermore, the average weight of new passenger cars and light trucks has increased since 1985, the year the fuel economy requirements stabilized. If engine size, weight, and power-to-weight ratios were reduced back to the levels of the mid-1980s, fuel economy could be improved substantial with no change in vehicle weight or size, and no compromise in safety. In fact, there would be gains in safety if typical vehicles did not have such speed performance capability.

If we, as a society, are committed to the goals of improving automotive fuel economy *and* to reducing road casualties; we can make major improvements in both with available technologies and with research to develop new technologies, materials, and design concepts. While it is important to be cognizant of the possibility that one of these goals might compromise the other, there is no inherent reason that major progress toward both goals cannot be achieved without substantial increases in the overall cost of automotive transportation or decreases in vehicle function.

In Germany, automotive fatalities are fewer than one-third the number of twenty years ago, and per capita automotive fatalities are less than half the number in the United States. The German fleet is substantially smaller and lighter, on average, than the U.S. fleet. This demonstrates that we are far from any inherent limit on the joint improvement in fuel economy and safety. In fact, the U.S. has fallen far behind most other industrialized countries in road casualties.

It is not insignificant that economic trends have a greater impact on traffic fatalities than even the most extravagant estimates of the effect of weight reduction. The current economic downturn is mostly responsible for the nearly ten percent drop in fatalities from 2007 to 2008, and the further seven percent drop in the first six months of 2009.

Finally, we would have to comment that the structure of the fuel economy rule for 2012-2016 sets standards based on vehicle footprint. While this may have a positive impact in encouraging manufacturers not to compromise vehicle size in order to improve fuel economy, it may have the unintended effect of increasing the number of larger (and probably heavier) light trucks. Had safety been the major concern, this loophole would not have provided in the fuel economy rule.

In looking to the past to predict the future, NHTSA's worst-case fatality projections are fatalities that will not occur. If worst-case safety scenarios are included in the rulemaking, then NHTSA must include best-case safety scenarios. Such analyses would have shown a decrease in fatalities due to manufacturers utilizing the best safety improvements in their less safe cars and decreasing weight in larger vehicles while not decreasing weight in small cars. NHTSA itself says its worst-case safety analysis is an "unlikely event" and that "actual fatalities will be less than these estimates." What NHTSA doesn't say and didn't do is a best-case safety analysis would result in fewer fatalities, not more.

NHTSA's fuel economy analysis assumes small vehicles will not lose more than 5% in weight while large vehicles will lose 10% in weight. But in the worst-case safety analysis, NHTSA assumes both small and large vehicles lose not only the same amount of mass but that size related factors such as wheelbase and track width are reduced proportionately to weight. Such a one size adjustment fits all vehicles is simply not true. One need only look at a few real world examples to see how erroneous that assumption is.

NHTSA's prediction that reduced weight means reduced track width and increased rollovers is erroneous. Three SUVs in 2010 (see chart below) have significantly lower weights but increased track widths than the 1996 SUVs made by the same companies. NHTSA's worst case scenario assumes the opposite: it assumes lighter 2010 SUVs will have reduced track widths when they have increased track widths which will lead to fewer rollover fatalities.

Year/Make/Model	Weight (#'s)	Track Width (Inches)
1996 Ford Explorer	3,690	58.7
2010 Ford Escape	3,355	60.5
1996 Chevrolet Blazer	3,518	54.8
2010 Chevrolet HHR	3,155	58.7
1996 Jeep Grand Cherokee	3,955	59.5
2010 Jeep Compass	3,261	59.8

Contrary to NHTSA's claims, manufacturers did not downsize or reduce the weight of small cars in the past. Cars with inertia weights less than 2,500 pounds made up 10.8% of the 1975 new car fleet but less than 0.1% of the model year 2006 cars. In contrast, passenger cars over in the 4,500 pound weight class and above made up 50% of the 1975 new car fleet but only 3.3% of the 2006 new car fleet.

The decline in full-size car weight is not due to introduction of SUVs since the market share of 4,500 pound and heavier passenger cars had dropped below 3% by 1985. Since adoption of CAFÉ, small passenger cars got heavier while large passenger cars got lighter with the biggest growth in the new car fleet coming in the middle at 3,500 pounds. The net effect has been a safer passenger car fleet, particularly when one considers improved safety technology built into passenger cars.

NHTSA has made no effort to do best-case safety analyses which would show scenarios that result in lives saved versus lives lost. Prodded by regulations, consumer demand, rating systems and product liability lawsuits, manufacturers constantly improve the safety of new models so looking to the past to predict the future leads to erroneous projections which understate safety gains. NHTSA may do good safety statistics but it does poor safety technology assessments. If looking to the past to predict the future is good for anything, then it teaches the introduction of new models after strong regulations or legislation presents the opportunity to use technology to improve both safety and fuel economy.

When Congress passed EPCA in 1975, it forced the car companies to phase out many older, less fuel efficient and unsafe vehicles. Resultant CAFÉ standards hastened the phase-out of unsafe models such as the Pinto and created an opportunity for the auto companies to build advanced safety into a whole new generation of models. Many of the most unsafe mid-1970's vehicles were replaced by new models with major gains in both safety and fuel efficiency. One of the best examples is the replacement of the VW Beetle by the Rabbit which had a 44% lower fatality rate and a 25% higher gas mileage. When Honda redesigned the 1800 pound Civic in 1981, its gas mileage improved by 12% and its fatality rate dropped by 44%. The below table shows six pairs of vehicles phased out during the late 1970's and early 1980's where in each case the fuel economy of the replacement vehicle went up by 5-20% and the fatality rate dropped by 30-50%.

EXAMPLES OF REPLACEMENT OF LESS SAFE, FUEL INEFFICIENT MODELS WITH SAFER, MORE EFFICIENT MODELS
<u>CALENDER YEARS 1985-89</u>

	CURB WT. Pounds	WHEELBASE Inches	HEAD INJURY Driver/Passenger	DEATHS Per 100MM VMT	CAFÉ mpg
HONDA					
1979-80 Civic	1760/1850	87/89	2030/2093 (1979 2D) 2626/1506 (1980 2HB)	2.64	32.4/34.7
1981-82 Civic	2000/1965	91/91	607/ 492 (1981 2HB)	1.47	36.1/39.6
TOYOTA					
1981-82 Tercel	2050/2050	98/98	1218/1179 (1980 2D)	2.32	35.8/35.4
1984-85 Tercel	2145/2145	96/96	658/ 492 (1984 4HB)	1.37	38.7/38.2
1980-81 Corolla	2000/2000	95/95	838/1162 (1980 4D)	2.31	30.4/31.1
1984-85 Tercel	2145/2145	96/96	658/ 492 (1984 4HB)	1.37	38.7/38.2
GENERAL MOTORS					
1984-85 Chevette	2200/2200	97/97	1886/1306 (1984 4HB)	2.46	34.7/35.0
1986-87 Nova	2250/2250	96/96	552/ 562 (1986 4HB)	1.20	36.1/36.1
			CALENDER YEARS 1981-82		
VOLKSWAGEN					
1973-74 Beetle	1950/2025	95/95	na	3.79	26.0/26.0
1977-78 Rabbit	1940/1940	94/94	1024/429 (1979 2HB)	2.11	32.5/32.8
FORD					
1975-76 Pinto	2590/2570	95/94	na	3.40	26.3/26.3
1981-82 Escort	2050/2090	94/94	618/1011 (1981 2HB)	2.18	32.4/33.8

NHTSA itself points out: “For example, a manufacturer could conceivably add length, width, or strength to a vehicle by replacing existing materials with light, high-strength components.” But then it goes on to say it has no information on what manufacturers are doing and will do so it can’t model it. Yet high strength, low allow (HSLA) steels have been used since at least the late 1970s when Ford used them for suspension components. During the last decade, the use of various types of high strength steels (HSS including HSLA) has expanded dramatically. In 2003, Volvo made major use of HSS in the structure of the XC-90 to provide excellent structural performance under rollover conditions. Today, virtually every production car and light truck has a significant amount of HSS in its structure.

We are mystified as to why NHTSA continues its past policy of emphasizing the worst case safety impact from the fuel economy standards that was used to justify not issuing more stringent fuel economy standards over the past twenty years. The new administration is committed to reducing greenhouse gases, and in support of that policy, it should be making the most realistic assessment of the safety impact of that policy. Under the new CAFÉ standards, auto companies, driven by a public that wants more safety, not less, will take advantage of the opportunity to build more safety into their new vehicles than required by NHTSA and lead to fewer, not more deaths.

Respectfully submitted,

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