

Auto Fuel Economy and Safety: Improving Together

This fact sheet provides key resources and references regarding the auto safety arguments that are being used to justify the [federal government's recent proposal](#) to roll back fuel economy and greenhouse gas emissions standards. It also provides a list of initiatives that the federal government should take if it is to truly prioritize auto safety.

The Bottom Line: Fuel Economy and Safety Have Improved Together

Fuel economy standards are associated with [improvements in safety](#) and a reduction in crash fatalities.

While the vast majority of approaches to increase fuel economy have no effect on safety, [research](#) from the University of Tennessee and Oak Ridge National Laboratory shows that there is a positive relationship that goes back decades. The [National Bureau of Economic Research](#) further found that fuel economy standards reduced fatalities by cutting out the weight in a way that made crashes less dangerous.

Fuel Economy Standards Are Now "Footprint-based" to Protect Safety

In [2006](#), the U.S. Department of Transportation (DOT) National Highway Traffic Safety Administration (NHTSA), and subsequently the U.S. Environmental Protection Agency (EPA), adopted **footprint-based** standards to incentivize automakers to improve fuel economy and reduce GHG emissions across vehicle class. These standards are more stringent for vehicles with smaller footprints (the rectangular area created by the four tires) and less stringent for larger vehicles. As a result, automakers are incentivized to take weight out of the heaviest vehicles without reducing size and are thus **safety-neutral or safety-positive**.



5-Star Safety Ratings

More Stars. Safer Cars.

Fuel economy standards can lead to even greater improvements in fuel economy by [strengthening the economy and increasing vehicle sales](#). This is true even as automakers add technology to vehicles because automakers maintain a lower price for entry-level vehicles in order to continue to attract new car buyers. As fuel economy increases, [automakers have not raised, and would not be expected to raise, the price of such vehicles](#) in a way that compromises sales.

Most Fuel Economy and Emissions Improvements Don't Affect Safety

- The vast majority of improvements to fuel economy and cuts to emissions have been and will be from improving the efficiency of the vehicle's powertrain -- through more efficient engines and transmissions -- and have no effect on safety one way or another.

Mass, Size, and Safety: Smart Designs and Choices are Proven to Enhance Safety

- Reducing the vehicle mass from heavier vehicles **while maintaining their size** (or vehicle "foot-print") can save lives.
- High-strength materials can **reduce mass** and maintain or improve vehicle safety.

It is the **federal government's responsibility** to ensure automakers do not pursue poorly designed approaches to reduce mass, which can reduce safety:

If automakers choose to 1) reduce mass by reducing vehicle size, 2) reduce mass only or more for smaller vehicles, or 3) reduce the structural mass of the vehicle without improving the new material's strength, safety can be reduced.

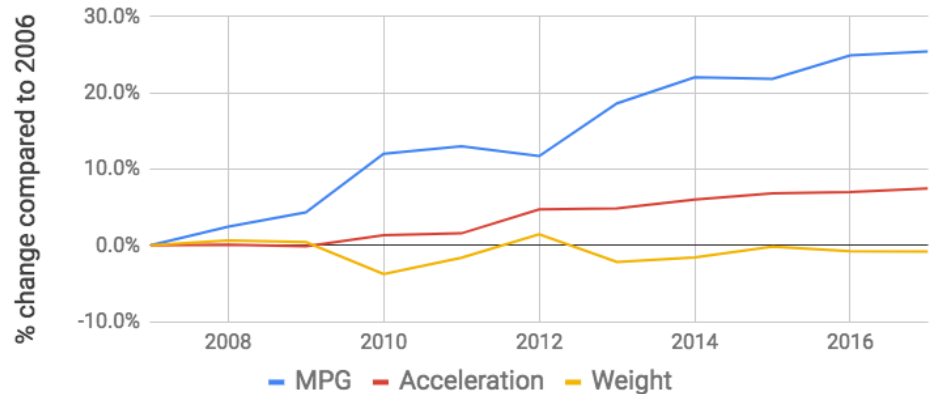
- **New safety features**, such as electronic stability control, forward collision warning, and automatic emergency braking, can change and weaken the relationship between vehicle mass and safety.



Past Improvements:

- While miles per gallon (MPG) could be increased by reducing vehicle acceleration, automaker innovation has allowed the industry to instead boost both fuel economy and acceleration. Since 2006, fuel economy has improved 25%, while acceleration has improved by 8%
- MPG can also be increased by reducing vehicle weight/mass. Changes in vehicle mass can have [positive, negative, or neutral effects](#) on safety, depending on the approach taken, as discussed below. That said, **mass has remained relatively unchanged** even as fuel economy has increased by about 25 percent since 2006.

Adjusted Fuel Economy, Acceleration and Weight 2006-2017



Future Improvements:

As shown in the table below, the trend of improved fuel economy coming primarily from improved engines and transmissions was predicted to continue under the standards established through 2025.

Technology	GHG	CAFE
Turbocharged and downsized gasoline engines	33%	54%
Higher compression ratio, naturally aspirated gasoline engines	44%	<1%
8-speed and other advanced transmissions	90%	70%
mass reduction	7%	6%
stop-start	20%	38%
mild hybrid	18%	14%
full hybrid	<3%	14%
plug-in hybrid electric vehicle	<2%	<1%
electric vehicle	<3%	<2%

DOT and NHTSA Should Focus on Clear Highway Safety Issues

DOT and NHTSA have failed to finalize numerous safety efforts begun under their own initiative prior to 2017, as well as at least **11 overdue vehicle safety rules** required by Congress. For safety to truly be a priority, DOT and NHTSA should be actively moving forward on rulemaking and other efforts to reduce the nearly 40,000 highway fatalities occurring in the U.S. each year.

For example, DOT and NHTSA should:

- Require cars to be safer in a crash, help avoid crashes in the first place, and secure a significant increase in funding from Congress to expand research, rulemaking, and enforcement regarding vehicle safety (NHTSA has less than **1/16th the budget of FAA**)
 - More than **600,000** lives were saved between 1960 and 2012 by vehicle safety technologies like seat belts, airbags, child safety seats, electronic stability control, and their associated federal standards
 - Require automakers to include the same **seat-belt reminders for rear seats** that are required for the front
 - Develop new standards to accelerate the adoption of critical **advanced driver assistance safety features**, such as automatic emergency braking systems that detect pedestrians and operate at highway speeds, blind spot warning systems, and systems to verify driver engagement and alert drivers if inattentive
 - Finalize proposed requirements for vehicle-to-vehicle (V2V) communication systems
 - Update and finalize **driving distraction guidelines**
 - Accelerate the development of on-board systems to **detect drunk drivers**
- Reduce the behavioral causes of crashes by securing a significant increase in funding from Congress to expand related research, education and state/local enforcement
 - [In the United States, in 2016:](#)
 - More than **10,000** people died in drunk driving crashes
 - More than **10,000** people who died in car crashes had no seatbelts or other restraints
 - More than **10,000** people died in crashes that involved speeding
 - Other factors, such as distracted, drugged, and drowsy driving also played major roles
- Provide new consumer information crash tests and vehicle safety ratings through an updated and stronger New Car Assessment Program (NCAP)
- Improve infrastructure to better **protect non-motorists** such as pedestrians and cyclists